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**Olin** CHEMICALS
LOWER RIVER RD., P.O. BOX 248, CHARLESTON, TN 37310

July 15, 1992

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VIA FEDERAL EXPRESS

Cheryl W. Smith
Senior Remedial Project Manager
United States Environmental Protection Agency
345 Courtland Street Northeast
Atlanta, Georgia 30365

Re: Environmental Evaluation Technical Memorandum
Olin Chemicals/McIntosh Plant Site
McIntosh, Alabama

Dear Ms. Smith:

Pursuant to paragraph 5.4.5 of the Work Plan, the Environmental Evaluation Technical Memorandum is enclosed. This memorandum is the first phase of the site ecological assessment. It includes characterization of the biota, identification of chemicals of potential concern, and an evaluation of potential ecological impacts. It further identifies data requirements needed to complete the assessment and presents plans for additional field work.

Please let me know if you have any questions regarding this submission or work in progress at McIntosh, Alabama.

Sincerely,

OLIN CORPORATION

JCBrown

J. C. Brown
Manager, Environmental Technology

\jcb\140
Enclosure

cc: W. A. Beal
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# ENVIRONMENTAL EVALUATION TECHNICAL MEMORANDUM

## REMEDIAL INVESTIGATION (RI)/FEASIBILITY STUDY (FS)

## McINTOSH PLANT SITE
## OLIN CORPORATION
## McINTOSH, ALABAMA

Prepared for
Olin Corporation
Charleston, Tennessee

July 1992

WCC File 90B449C-4B

**Woodward-Clyde Consultants**

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## EXECUTIVE SUMMARY

Olin Chemical Corporation is conducting a Remedial Investigation/Feasibility Study (RI/FS) at their McIntosh, Alabama facility. Part of the RI/FS is a baseline risk assessment that includes an ecological assessment. The purpose of the ecological assessment is to characterize the biota and the physical environment of the site and to evaluate the potential impact to the biota from site constituents. The ecological assessment is being conducted in two phases. The first phase, which is presented in this environmental evaluation technical memorandum (EETM), includes characterization of the biota, identification of chemicals of potential concern and an evaluation of potential ecological impacts.

Two operable units have been designated for the facility. Operable Unit 1 (OU-1) is the plant area (all of the Olin property except the area defined as OU-2). Operable Unit 2 (OU-2) includes a basin adjacent to the Tombigbee River, the wetlands within the Olin property line, and a wastewater ditch. The areas with potential impact from site constituents in Operable Unit 1 are believed to be the main plant area and production facilities, which do not have any significant biological habitats. Therefore, the ecological assessment focuses on Operable Unit 2.

The ecosystem of OU-2 was characterized through studies of the vegetation, terrestrial/amphibious vertebrates, benthic macroinvertebrates, and fish. The studies of macrophytic vegetation and benthic macroinvertebrates incorporated consideration of evidence of stress or perturbation that might be related to the site constituents. In the studies of higher (terrestrial/amphibious) vertebrates and fish, respectively, emphasis was placed on developing a more thorough understanding of the overall structure of the ecosystem and developing detailed information on bioaccumulation of chemicals of concern by key aquatic species.

The composition and structure of vegetation communities in OU-2 were essentially as would be expected in similar areas along the lower Tombigbee River valley. Most indications of stress were fairly localized and were reasonably attributable to factors other than air, soil/sediment, or water contamination by the site constituents of concern.

Results of benthic sampling suggested that the basin may not support as diverse a macroinvertebrate community as might generally be expected in similar systems. It remains unclear, however, to what extent the basin is atypical of comparable lower Tombigbee River floodplain systems. The only definite correlation between benthic composition and distribution within the basin is with depth. Distribution and density of the most abundant groups (oligochaetes, ostracods, chaoborids, and chironomids, collectively comprising 94 percent of all invertebrates found) were highly dependent upon depth. The data do suggest some potential relationships between mercury concentrations and the benthos; however, any distinct statistical relationships were not identified.

Twenty-three fish species were identified during the fish sampling activities in the basin. An estimated 812 specimens representing 16 species were recorded during electrofishing. Although the primary objective of fish sampling in the basin was to obtain tissues from representatives of two species for analyses, observations were made of the relative abundance and community structure during nonflood conditions. With due consideration of the selectivity of the sampling methods, the numbers and types of fishes captured/observed were consistent with general expectations.

Largemouth bass and channel catfish were sampled for fish tissue analysis. Twenty specimens were analyzed for each species (ten fillet and ten whole-body samples). The fish were analyzed for mercury and a selected list of eleven organic constituents. Seven of the twelve analytes were reported in at least one of the 40 fish samples. Total mercury was reported in all of the largemouth bass samples and in all but one of the channel catfish samples. Hexachlorobenzene and the chlorinated pesticides (4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) were also commonly reported in the fish samples. The detected mercury concentrations in the sampled fish were below the published "lowest observed effects levels" (LOELs) for any fish. This information, coupled with the observation that "condition factors" (K) of several basin fish tend to equal or exceed those of other populations, supports a conclusion that limited, if any, adverse impacts to the fish *per se* are associated with the detected analytes.

This EETM presents much of the information needed to complete the "biological characterization" component of the ecological assessment for the RI/FS. Most indications of stress or adverse impact seem to be attributable to factors other than site constituents. However, interpretation of the significance of some of the observations was confounded by the physical complexity of the system (particularly the annual flooding). Further investigation, either through detailed review of existing data (e.g., aerial photographs) or limited field efforts, will be conducted in order to obtain a better understanding of the ecosystem. One aspect that will be investigated is whether comparable environments along the lower Tombigbee River floodplain support "richer" benthic macroinvertebrate communities, particularly in the context of diversity.

# 1.0 INTRODUCTION

Olin Chemical Corporation is conducting a Remedial Investigation/Feasibility Study (RI/FS) at their McIntosh, Alabama facility. Part of the RI/FS is a baseline risk assessment that includes an ecological assessment. The purpose of the ecological assessment is to characterize the biota and the physical environment of the site and to evaluate the potential impact to the biota from site constituents. The ecological assessment will be conducted in two phases. The first phase, which is presented in this environmental evaluation technical memorandum (EETM), includes characterization of the biota, identification of chemicals of potential concern and an evaluation of potential ecological impacts. Potential toxicological impacts to biota will be further characterized in the second phase. This memorandum also identifies any data requirements needed to complete the ecological assessment in conformance with current EPA Risk Assessment Guidance for Superfund (RAGS): Volume II Environmental Evaluation Manual (March, 1989). The complete ecological evaluation will be incorporated into the baseline risk assessment report, which will be submitted at a later date.

The Olin Chemicals McIntosh plant is located approximately one mile east-southeast of the town of McIntosh, in Washington County, Alabama. A site location map is presented in Figure 1. The property is bounded on the east by the Tombigbee River, on the west by land not owned by Olin west of U. S. Highway 43, on the north by the Ciba-Geigy Corporation plant site and on the south by River Road.

Olin operated a mercury cell chlorine-caustic soda plant (constructed in 1951) on a portion of the site from 1952 through December 1982. In 1954, Olin began construction of a pentachloronitrobenzene (PCNB) plant on an adjacent portion of Olin property. The plant was completed and PCNB production was started in 1956. The McIntosh plant was expanded in 1973 to produce trichloroacetonitrile (TCAN) and 5-ethoxy-3-trichloromethyl-1,2,4-thiadiazole (Terrazole®). The PCNB, TCAN and Terrazole® manufacturing areas were collectively referred to as the crop protection chemicals (CPC) plant. In 1978, Olin constructed a diaphragm cell caustic soda/chlorine plant, which is still in operation. The CPC plant and mercury cell plant were shut down in late

1982. The McIntosh plant continues to operate, producing chlorine, caustic soda, sodium hypochlorite and sodium chloride and blending hydrazine.

Olin currently monitors and reports on numerous facilities within the plant that are permitted through the U. S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM). These include water and air permits as well as a Resource Conservation and Recovery Act (RCRA) post-closure permit. The RCRA post-closure permit includes groundwater protection for closed RCRA units, including the weak brine pond, the stormwater pond and the brine filter backwash pond. The post-closure permit also requires corrective action for releases of 40 CFR 261 Appendix VIII constituents from any solid waste management units (SWMUs) at the facility. There are not any active RCRA units at the facility. Olin also has permits for three injection wells for mining salt and a neutralization/percolation field.

In September 1984, Olin's McIntosh plant site was placed on the National Priority List of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) or "Superfund." Groundwater contamination at the site has been established based on the results of various investigations. Mercury and chloroform are the principal contaminants identified in the groundwater at the site. Mercury contamination was evidently caused by the operation of the mercury cell chlor-alkali plant during the period from 1952 to 1982. The chloroform contamination is probably a degradation product from the operation of the CPC plant from 1954 to 1982.

Investigations have also indicated contamination in a 65-acre natural basin, herein referred to as the "basin," located on the Olin property east of the active plant facilities. This basin received plant wastewater discharge from 1952 to 1974.

Two operable units have been designated for the facility. Operable Unit 1 (OU-1) is the plant area (all of the Olin property except the area defined as OU-2). Operable Unit 2 (OU-2) is the basin, including the wetlands within the Olin property line and the wastewater ditch leading to the basin. Figure 2 is a facility layout map delineating the boundaries of the two operable units. The areas with potential impact from site constituents in Operable Unit 1 are believed to be the main plant area and production facilities, which do not have any significant biological habitats. Therefore, the ecological assessment focuses on Operable Unit 2.

A work plan was developed for the RI/FS and submitted to EPA on December 15, 1990. EPA commented on the work plan on April 4, 1991; an amended work plan was submitted to EPA on May 25, 1991 and approved on July 17, 1991. Following approval of the amended work plan, Phase I activities in Operable Unit 2 began with a bathymetric survey of the basin conducted over a four-day period from July 22 through July 25, 1991. This was followed by Phase I sediment and surface water sampling activities conducted from August 6, 1991 through August 30, 1991. A vegetative stress survey involving vegetation sampling and detailed ground surveys for endangered and threatened plant species existing within OU-2 was also performed in September 1991. Macroinvertebrate and fish sampling were performed during the period from November 4 through 8, 1991. OU-2 Phase II sediment sampling was completed on November 13 and 14, 1991. The results of the site characterization activities were presented in the Preliminary Site Characterization Summary (PSCS), which was submitted to EPA on April 16, 1992.

## 1.1 SUMMARY OF PREVIOUS INVESTIGATIONS

In 1976, an extensive Environmental Impact Study (EIS) was conducted by J. B. Converse, Inc. and Betz Environmental Engineers under a third-party agreement between Olin, EPA Region IV and the contractors (Betz and Converse, 1977). The purpose of this EIS was to evaluate the impact of the construction of a chlor-alkali diaphragm cell process facility at the McIntosh plant site. The EIS provides extensive information on terrestrial and aquatic ecosystems of the area.

The major vegetation and landscape types within a 96-square mile area (that included areas now designated as OU-1 and OU-2) were identified and mapped for the EIS. A wildlife survey was conducted to determine the species of terrestrial and amphibious vertebrates that were inhabiting the area and to identify the habitat-wildlife relationships. Rare, threatened or endangered species were also identified for the 96-square-mile study area.

The 1976 EIS also included an evaluation of the surface water and aquatic habitats of the study area. This aquatic survey consisted of chemical analyses of surface water and examination and collection of algae, macroinvertebrates and fish. Sampling was conducted at the following four stations on the Tombigbee River:

- Immediately above the Ciba-Geigy facility (Station 1)
- Between Olin and Ciba-Geigy discharges (Station 2)
- Immediately below the Olin discharge (Station 3)
- 1.8 miles below the Olin discharge (Station 4)

Water and biota samples were also collected from the discharge ditch between the basin and the Tombigbee River. The survey concluded that habitats available to both algae and benthic macroinvertebrates in the four river stations were limited by the nature of the bottom substrates, the current, and the wave action resulting from barge traffic on the river. In addition, the survey concluded that the naturally high turbidity and the fluctuations of water levels precluded the establishment and maintenance of stable littoral populations of macroinvertebrates and algae. The productivity (biomass) of the discharge ditch measured in number of species of individual organisms was relatively higher than that of the river stations. This was attributed to diversity and stability of habitat and higher concentrations of dissolved oxygen.

Fish were collected at three river stations (1, 3 and 4) and from the discharge ditch. A total of 36 species and 3,181 specimens were collected at the four stations. Most fish were robust, and of those examined, fat was present in the abdominal cavity. Of the 3,181 fish examined, only 4 showed signs of disease or deformity. The data from the fish sampling were presented as relative abundance, expressed as the percent of total number of specimens. With the exception of the samples collected from the discharge canal, differences in the relative abundance were attributed to the mobility and schooling behavior of the fish. Sampling in the discharge ditch yielded a larger number of individuals and fewer species than the river stations. Possible reasons for the variations in relative abundance between the ditch and river stations included the sampling methods (i.e., sampling was more complete in the ditch because the ditch could be effectively blocked off) and the differences in the habitat between the ditch and river stations.

In 1986, Olin conducted limited fish sampling in the basin. Eight species of fish were collected and the samples analyzed for total mercury and chlorinated benzenes (dichlorobenzene, trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene and pentachloronitrobenzene). Table 1 summarizes the results of the fish sampling. The detected mercury concentrations ranged from 0.12 mg/kg to 1.89 mg/kg. The total chlorinated benzene concentrations ranged from 0.03 mg/kg to 4.19 mg/kg. Due to the limited sampling and the informal protocols, definitive conclusions were not drawn from the fish analyses data.

In October 1987, Olin conducted a sediment and surface water study of the basin area according to a study plan reviewed and approved by EPA (Olin, 1988). The basin area study was designed to address data deficiencies identified by EPA's subcontractor in a 1985 Forward Planning Study (Camp, Dresser and McKee, 1986) by assessing potential releases of hazardous constituents to the basin area. The basin area study included collection and analyses of eight surface water samples and ten sediment samples. The mercury concentrations detected in sediment ranged from <0.3 to 60.5 mg/kg across the basin. However, a duplicate sample analysis revealed 9.0 mg/kg of mercury at the same location as the 60.5 mg/kg value. Other duplicate sediment values ranged from 0.4 mg/kg to 25.5 mg/kg of mercury. Pentachloronitrobenzene (PCNB) was detected in three sediment samples, up to a maximum concentration of 14.5 mg/kg. However, in two of three samples, detection of PCNB was not confirmed by duplicate analysis. Hexachlorobenzene (HCB) was detected in five of the ten sediment samples. The detectable concentrations of HCB ranged from 1.9 to 114 mg/kg. The detection limit for PCNB and HCB was 0.66 mg/kg.

In 1989 an RI/RA report was prepared for Olin by ERM (ERM, 1989). The purpose of the RI/RA report was to present all relevant data, interpretations, findings and conclusions arising from the groundwater investigations, the ongoing RCRA detection program, RCRA Solid Waste Management Units (SWMU) closures, the ongoing RCRA Corrective Action Program, and other studies conducted at the McIntosh facility from 1980 through 1989. The 1989 RI/RA includes discussion and interpretation of the ecological data that had been collected at the site prior to the RI.

## 1.2 PHYSICAL CHARACTERISTICS OF OU-2

The RI activities that were used to define the physical characteristics of OU-2 included the following:

- Site reconnaissance and review of existing information
- Bathymetric survey
- Sediment sampling

The site reconnaissance and review of existing information included evaluation of selected aerial photographs and topographic maps to define the drainage in OU-2. Historical river stage data were reviewed to assess the temporal trends in flooding of the Tombigbee River. The bottom configuration of the basin was defined with a bathymetric survey, and lithologic descriptions of sediment grab and core samples were used to characterize the shallow stratigraphy. The methods and results are discussed in detail in the PSCS. A summary of the physical characteristics of OU-2 is presented in this section.

### 1.2.1 Drainage

Prior to the construction of the Olin facility, the present wastewater ditch was a natural drainage feature that carried runoff from the upland areas where the plant is presently located. This runoff naturally discharged into the basin. In 1952, parts of the Olin plant was constructed on this upland area. From 1952 to 1974 wastewater and runoff from the facility discharged to the basin.

In 1974 Olin re-routed the wastewater ditch to the Tombigbee River, bypassing the basin. A sheet pile weir was also constructed at this time, located at the southern extent of the basin. This weir was constructed to keep the wastewater stream from discharging into the basin during periods of low river stages. Another drainage pathway into OU-2 carries runoff from the very northern extent of Olin property near the boundary with Ciba-Geigy. There is not a history of plant operations within this drainage area. Runoff from this northern area is to the two small ponds north of the basin, which subsequently discharge into the basin.

### 1.2.2 River Stage Data

The basin and surrounding wetlands lie within the floodplain of the Tombigbee River. During seasonal high water levels (typically 4 to 6 months per year), the basin and wetland areas are inundated, becoming contiguous with the adjacent Tombigbee River. Historical river stage data from the U. S. Corps of Engineers, Coffeeville Station (located approximately 42 miles north of McIntosh), were obtained by Olin and are graphically presented on a hydrograph (time versus river stage) (shown in Figure 3). The hydrograph shows a trend of seasonal rises in water elevations beginning as early as November and lasting until as late as August of the following year. Over the previous five high-water events, river stages have risen an average of 30 feet.

Although these data were obtained 42 miles north of McIntosh, it is believed that river stages in the vicinity of the site are similar. Figure 3 shows that river levels were well above the basin weir (elevation 3.18 feet msl), inundating the basin and entire wetland area within Olin property during these periods.

### 1.2.3 Bathymetric Survey

The most significant physical feature of OU-2 is the 65-acre basin. During Phase I of the RI activities, a bathymetric survey was conducted within the basin for the purpose of defining its bottom configuration. North-south and east-west profile transects were collected using sonar equipment (fathometer) and an electronic distance measurement (EDM) unit. Using the EDM and the benchmark on the basin weir, the transects were referenced to the plant coordinate system. A contour map of the basin floor was generated from these basin floor depth profiles with a computer contour program (SURFER®). This contour map is presented in Figure 4.

The most recognizable feature of the basin floor is a relatively steep-sided topographic low located in the north central portion of the basin. Water within this low is as deep as 38.5 feet. Another feature of the basin floor is a mound located approximately 430 feet northeast of the former discharge ditch. Contours of this mound indicate relief in excess of 5 feet. Another distinct feature is a depression that exists at the basin side of the weir, where water depth increases from about one foot to 4 feet. The remainder of the basin floor (approximately two-thirds of the basin area) is relatively flat, gently sloping to the north and west. Water depth is less than 6 feet in these gently sloping areas.

### 1.2.4 Description of Sediments in OU-2

During the sediment sampling activities in OU-2, a total of eight subsurface sediment cores were collected. Figure 5 shows the core sample locations. Three cores were collected to a total depth of 5 feet during Phase I; two cores (C1 and C2) from the basin and one core (C3) from the former discharge ditch to the basin. Following evaluation of the preliminary chemical data from core samples and the surface sediment samples, five additional sediment cores were collected as part of Phase II. Two were collected from new locations in the basin (I7 and E2) and one was collected at the Phase I Core C2 location (C2-2). Two cores were also collected from the outfall ditch (OD15 and OD25) during Phase II.

The sediment descriptions for core OD25 located in the outfall ditch indicate approximately 1 foot of loose organic silt and clay with sand, underlain by a 1-foot layer of stiff sandy clays, followed by 1 foot of firm, fine-to-medium sands. These two lower layers (stiff clays and firm sands) are indicative of the upland Quaternary alluvial sediments ($Q_1$) which exist beneath the site. Thus, there appears to be only about 1 foot of ditch sediment overlying the $Q_1$ deposits at this location.

Location OD15 is approximately 2,000 feet downstream of the outfall. About 1 foot of gray and tan, fine sand is underlain by 4 feet of alternating layers of soft gray and tan silty clays, interbedded with white layers below 2.5 feet. A stiff, dark gray and tan, silty clay encountered at 5.2 feet is believed to be the Quaternary alluvial deposits. The interbedded white layers found below 2.5 feet may be the result of early plant operations when lime was discharged to the wastewater ditch. Since lime layers were found to a depth of 5 feet, it is believed that at least the upper 5 feet of sediment in the outfall ditch at this location had been deposited since the beginning of plant operations in 1952.

A geologic cross-section, presented in Figure 6, was generated from descriptions of cores collected in the basin and the former wastewater ditch. A relatively thin unit consisting of tan, black and dark gray silty clays and clayey silts was encountered in all five cores. The maximum thickness of this unit was 5 feet, found in the vicinity of core C3 in the former discharge ditch to the basin. The unit gradually thins to approximately 1 foot in the eastern half of the basin at core C1. Interspersed throughout this unit are fine, medium- and coarse-grained sands up to 1.5 inches thick. The thicker portions of this silty clay/clayey silt unit, encountered near C2, are interpreted to be deposits from the sediment carried down the wastewater ditch, possibly the result of increased sedimentation due to plant operations. Construction and excavation of surface sediments at the plant site would have increased the sediment load that is carried by surface runoff to the basin, resulting in the lens-shaped sedimentary unit feature described above.

A dark gray, organic silty clay unit was encountered in all cores at approximately the same depth relative to the basin water level. This silty clay unit is interpreted to be floodplain deposits of the adjacent Tombigbee River. A dark gray, medium-to-fine sand was encountered in the bottom 6 inches of core C1. Sand was also found in the bottom of the core at I7, located to the north of C1.

## 1.3 ECOLOGICAL ASSESSMENT APPROACH

The overall objective of the ecological assessment is to evaluate the current and potential future ecological effects of site constituents. The first phase of the assessment consists of defining the chemicals of potential concern (based on ecological considerations), characterizing the ecosystem, and assessing whether any impacts have occurred. Any potential impacts that are identified will then be further characterized in the second phase, which will be included in the baseline risk assessment chapter of the draft RI report.

A list of media-specific chemicals of potential concern for the human health risk assessment was submitted to EPA in the hazardous substance indicator parameter technical memorandum on December 19, 1991. The list was revised for the exposure assessment, which was submitted to EPA on June 2, 1992. This EETM includes identification of chemicals of potential concern based on the site chemical data and the potential effects of the detected site constituents on the ecosystem.

Characterization of the ecosystem is conducted with data obtained during the RI and data from a review of the literature and previous investigations at the facility. Based on this characterization, ecological endpoints are identified. Where appropriate, these endpoints are measurable indicators of potential impact from contaminants. For some of the data (e.g., relative abundance of fish species), the endpoints are more qualitative. To meet the objectives of the first phase of the ecological assessment, this EETM is organized as follows:

- Section 2.0: Chemicals of Potential Concern — Identification of chemicals of potential concern based on analytical data from the site characterization and ecological considerations

- Section 3.0: Ecological Evaluation — Description of methods; ecological characterization, including an identification of rare, threatened or endangered species; and identification of measurement endpoints for subsequent assessment of potential impacts

- Section 4.0: Assessment of Impacts — An evaluation of the quantitative and qualitative endpoints that are identified in Section 3.0 to assess whether there has been any impact

- Section 5.0: Future Activities — Future activities that will be conducted based on the results that are presented in this EETM.

The second phase will consist of an exposure assessment, a toxicity assessment and risk characterization. A site conceptual exposure model will be developed for the exposure assessment to define the complete and significant ecological exposure pathways at the site. Exposure concentrations will be developed based on concentrations detected in the media and the use of factors such as fate and transport of the chemicals of potential concern. The exposure assessment will also include bioaccumulation modeling to assess the potential impact on the various trophic levels. The toxicity assessment will be an evaluation of the toxicity of the chemicals of potential concern to the biota that are identified as potential indicator receptors. The risk characterization then will be based on site-specific, risk-based toxicity criteria that are developed from the exposure assessment and the toxicity assessment.

# 2.0
# CHEMICALS OF POTENTIAL CONCERN

The list of chemicals of potential concern that was developed for the human health risk assessment was based on the chemical data from the RI sampling activities. Initially, all of the constituents that were detected in the sampled media were considered. The list was then reduced based on the concentrations, frequency of detection and a screening method using human health toxicity factors. This same general methodology is used to develop the list of chemicals of potential concern for the ecological assessment. However, the initial list of detected constituents is screened by comparison to ecological-based guidelines and criteria (i.e., the Region IV sediment screening values and Federal Water Quality Criteria).

## 2.1 REVIEW OF CHEMICAL DATA

The site characterization activities for OU-2 included the collection of chemical analytical data from three media (sediment, surface water and fish). Sediment and surface water samples were analyzed for a wide range of inorganic and organic constituents by EPA Contract Laboratory Program (CLP) methods. These CLP data are the basis for selecting the chemicals of potential concern. The sediment and surface water sampling results are summarized in this section. A more detailed presentation of the sampling activities and the results were included in the Preliminary Site Characterization Summary, which was submitted to EPA on April 16, 1992. The fish samples were analyzed for mercury and selected organic constituents based on the preliminary sediment results. These data are described in the ecological evaluation, which is presented in Section 3.0.

### 2.1.1 Sediment Sampling

A total of 15 core sediment samples and 112 grab, surficial (upper 6 inches) sediment samples were collected from within the basin and ditches in OU-2 during the Phase I sediment sampling (August 1991). Figure 5 shows the Phase I sediment sampling locations. These Phase I locations were defined in the amended work plan. The grab samples were collected from the bioaccessible zone. Therefore, the data from chemical analyses of these grab samples are used for identification of the chemicals of potential concern for the ecological assessment.

The grab sediment samples were collected on a grid established at an approximate 200-foot spacing across the basin. Grab samples were also collected from the wastewater ditch, the current discharge ditch, and the former discharge ditch from the wastewater ditch to the basin. The grab ditch samples were obtained at approximate 200-foot intervals along the centerline of the ditches.

All Phase I sediment samples were split into two subsamples. One subsample was analyzed for mercury by EPA Contract Laboratory Program (CLP) procedures. In addition to the mercury analyses, randomly selected grid and ditch samples were analyzed for soluble mercury, pH, total organic carbon (TOC), sulfide, sulfate, and CLP parameters including a selected list of 13 Target Analyte List (TAL) constituents (other than mercury), Target Compound List (TCL) volatile organics, TCL semivolatile organics, and pesticides/PCBs. The grab sample locations designated for CLP analyses were presented in the amended work plan. The other subsample from each sample location was secured in a locked refrigerator on Olin property, protected from light and later analyzed for the organic indicator parameters.

Organic Constituents

The results of the validated Phase I TCL analyses are presented in Appendix A. These results are summarized in Table 2.

For semivolatile analytes, hexachlorobenzene was detected in 10 of the 21 surficial soil samples. The maximum concentration reported for hexachlorobenzene was 810 mg/kg at outfall ditch location OD20. Dichlorobenzene isomers were reported in 5 of the 21 grab sediment samples. The reported concentrations were below the sample quantification limits in four of these samples. The one concentration reported above the sample quantification limit was 1,3-dichlorobenzene reported at 0.95 mg/kg (OD06). The compound 1,4-dichlorobenzene was reported in each of the five sediment samples, with 1,3-dichlorobenzene reported in four of these samples. The compounds

1,2-dichlorobenzene and 1,2,4-trichlorobenzene were reported in a single sediment grab sample (OD06).

Chlorobenzene was the only volatile constituent detected in the grab sediment samples. Other volatile constituents (i.e., methylene chloride, acetone, 2-butanone and carbon disulfide) were reported but were subsequently qualified as nondetected by data validation. Chlorobenzene was detected in 20 of the 21 grab samples. Nine of these samples have estimated chlorobenzene concentrations below the Contract Required Quantitation Limit (CRQL). The maximum concentration reported in the grab samples was 1.0 mg/kg at location G3.

The most common TCL pesticide/PCB constituents were 4,4'-DDD, 4,4'-DDT and 4,4'-DDE. At least one of these three compounds was detected in all 21 surficial sediment samples. Additional pesticides were reported in the surficial grab samples but were less common and occurred at lower concentrations. These pesticides include alpha BHC at locations J7 and G3; beta BHC at grab locations F7, C6, DD01 and OD06; and delta BHC at locations D6 and G8. Pesticides gamma BHC, endosulfan I and aldrin were reported in the grab sample from location C5. Heptachlor epoxide and endosulfan II were reported in the sample from location I10. Other pesticides were reported in the preliminary results, but these were qualified as nondetected by data validation.

Pentachlorobenzene and/or pentachloronitrobenzene were reported as tentatively identified compounds (TICs) in 6 of the 21 surficial sediment samples.

As discussed in the PSCS, hexachlorobenzene, pentachlorobenzene and pentachloronitrobenzene were selected as the organic indicator parameters for the laboratory screening analyses. The laboratory screening results are presented in Appendix A. Results of these screening analyses indicated that hexachlorobenzene was the most commonly found constituent of the three compounds, and was detected at the highest concentrations. Therefore, hexachlorobenzene was used in the PSCS for the assessment of the horizontal extent of organics in the sediments of OU-2. The results show that hexachlorobenzene concentrations above 2.0 mg/kg are confined to the southern half of the basin, with the highest concentration (265 mg/kg) detected at grid location E2. There was an isolated detection of 1.8 mg/kg in one sample in the northeast corner of the basin (I10). Concentrations were reported below the detection limit in 53 of the 77 basin samples. Hexachlorobenzene was detected in 29 of the 35 ditch grab samples. Ditch sample OD15 showed the highest hexachlorobenzene concentration, 1002 mg/kg. The distribution of hexachlorobenzene in the basin indicates that the horizontal extent has not been defined. Additional sampling is planned as outlined in the Phase III sampling and analysis plan submitted to EPA on June 25, 1992.

The Phase II sampling that was conducted in November 1991 primarily consisted of core samples. At two locations, samples were collected at three depths within the upper 6 inches to evaluate the vertical distribution of constituents in the bioaccessible zone. These samples were analyzed for TCL semivolatile compounds and mercury. The hexachlorobenzene and mercury results are summarized below:

| | Depth Interval (in) | Mercury (mg/kg) | Hexachlorobenzene (mg/kg) |
|---|---|---|---|
| CORE I7 | 0 to 2<br>2 to 4<br>4 to 6 | 214<br>329<br>214 | 0.39J<br>1.10U<br>0.34J |
| CORE E2 | 0 to 2<br>2 to 4<br>4 to 6 | 5.1<br>2.1<br>3.4 | 250<br>72<br>70 |

NOTES: J = Estimated concentration below the CRQL.
U = Not detected at or above the concentration shown.

Generally, these data do not show apparent trends in the vertical distribution of site constituents within the upper 6 inches of sediment.

## Inorganic Constituents

Twenty-one sediment grab samples were analyzed for the selected list of fourteen TAL constituents. An additional 91 grab samples were analyzed for mercury. In correspondence from Mr. Jim Brown of Olin to Ms. Cheryl Smith of EPA, (August 1991), it was explained that the sediment background sample was to be designated from one of the northernmost samples in the basin. Based on the data from the grab samples, none of the CLP samples along this transect appear to be background with respect to mercury. Therefore, using any of these samples for background with respect to the other inorganic analytes did not appear appropriate. Olin proposes to collect a background sample for the selected list of TAL constituents during the Phase III sampling activities as described in the Phase III SAP (June 25, 1992).

The results of the TAL analyses of the sediment samples are summarized in Table 3. Since inorganic constituents can be of natural origin at varying concentrations and an appropriate background sample has not been collected at this time, Table 3 compares the OU-2 sediment data to reported common ranges (U. S. EPA, 1983) for naturally occurring concentrations.

Table 3 shows that antimony, cadmium and selenium were detected at concentrations above the reported common range, and cyanide, which does not have a reported common range, was also detected. It is not evident whether the reported concentrations for these four analytes are due to contamination, naturally occurring variations in sediments or analytical variability. The background sample that will be collected during Phase III may provide additional data regarding the significance of the reported TAL constituents.

To evaluate the potential ecological impacts of the reported sediment concentrations, Table 3 also lists the Effects Range-Low (ER-L) and Effects Range-Median (ER-M) values (Long and Morgan, 1990), which are the basis of the U. S. EPA Region IV sediment screening values. The ER-L and ER-M values are discussed in more detail in Section 2.2.

### 2.1.2 Surface Water Sampling

A total of 12 surface water samples were collected in August 1991. Nine samples were collected at five locations in the basin. Samples were collected at two discrete depths at four of these locations. In addition, one sample was obtained from each of the three ditches (the current wastewater ditch, the current discharge ditch to the Tombigbee River, and the former discharge ditch to the basin). The samples were analyzed for mercury (total and dissolved), the selected list of other TAL constituents (total and dissolved), TCL volatile organics, TCL semivolatile organics, TCL pesticides/PCBs, dissolved oxygen (DO), pH, total organic carbon (TOC), total suspended solids (TSS), and total dissolved solids (TDS).

Only two TCL analytes were reported in the surface water analyses. Chloroform was reported in one sample (OD25) at an estimated concentration of 3.0 μg/l, below the CRQL. Alpha BHC (a pesticide constituent) was reported in two samples: DD02 at 0.18 μg/l and 0D25 at 0.22 μg/l.

The results of the total TAL analyses are summarized in Table 4. For the purpose of evaluating the potential ecological significance of the results, Table 4 also lists the Federal Water Quality Criteria for chronic effects to fresh water aquatic organisms. These criteria are discussed in more detail in Section 2.2.

## 2.2 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

Media-specific chemicals of potential concern were identified for the human health risk assessment. However, the potential ecological exposure pathways and ecological receptors were similar for constituents contained in both the sediment and surface water. Therefore, a single list of chemicals of potential concern is identified in this section for the ecological assessment based on the sediment and surface water data. As a starting point, all the TCL, TAL and TIC constituents that were detected in the sediment and surface water are considered as candidates for the list. To focus the assessment on the dominant ecological risk that may be present at the site, the list was reduced by eliminating the compounds that were believed to contribute a relatively insignificant risk based on the concentrations, frequency of occurrence and comparison to ecological criteria and EPA guidelines.

Organic Constituents

Table 2 summarizes the validated TCL sediment data. The results of the TCL analyses of the surface water are summarized in Section 2.1. Seventeen TCL constituents were detected in the 21 grab sediment samples. Chlorinated benzenes and chlorinated pesticides were the most commonly detected and were detected at the highest concentrations. Only two TCL analytes were detected in the surface water. Chloroform was reported in one sample at an estimated concentration of 3.0 μg/l, below CRQL. Alpha BHC (a pesticide constituent) was reported in two samples: DD02 at 0.18 μg/l and 0.22 μg/l. Most of the organic constituents detected in the sediment and surface water do not have established ecological-based criteria or guidelines. Therefore, the list of chemicals of potential concern for the organics is based primarily on concentration, frequency of detection, and other evidence to indicate whether the chemicals are common at the site.

The two volatile constituents that were detected (chloroform in the surface water and chlorobenzene in the sediment) are both included on the list of chemicals of potential concern. Although found at low concentrations (≤1.0 mg/kg) chlorobenzene was reported in 20 of the 21 sediment samples. Chloroform was detected only in one surface water sample; however, chloroform is a constituent in groundwater at the site. All of the detected TCL semivolatile compounds and two TIC semivolatile compounds (pentachlorobenzene and pentachloronitrobenzene) are retained on the list. These chlorinated benzenes are known to have been present in the waste from past operations of the CPC plant. In addition, the fish samples were analyzed for these chlorinated benzenes, and therefore comparisons can be made between the fish and sediment data.

As discussed in Section 2.1, at least one of the DDT compounds were detected in each of the sediment grab samples at a maximum concentration of 4.0 mg/kg for 4,4'-DDT. Eight other pesticide constituents were reported in the sediments. Of these, five were only detected in one of the 21 samples. Alpha-BHC and delta-BHC were each found in two samples with maximum concentrations of 0.014 mg/kg and 0.017 mg/kg, respectively. Beta-BHC was found in four samples at a maximum concentration of 0.018 mg/kg. Only 1 pesticide constituent was reported in the surface water samples (alpha-BHC in 2 of the 12 samples at a maximum concentration of 0.22 μg/l). Based on the frequency of the detections and the concentrations that were detected, only the three DDT constituents are retained on the chemicals of potential concern list.

Inorganic Constituents

Table 3 compares the validated TAL sediment results to reported common ranges and the ER-L and ER-M values listed in Long and Morgan (1990). The ER-L and ER-M values were establish by the National Oceanic and Atmospheric Administration (NOAA) as informal guidelines for evaluation of sediment data. Data that were derived from a wide variety of methods and approaches were compiled and sorted by contaminant concentration vs. biological effects for specific analytes. ER-L (Effects Range-Low) is the 10 percentile concentration below which adverse ecological effects are not expected to occur and ER-M is the median of the data (50$^{th}$ percentile). The ER-L values, reported as concentrations, are the basis for the EPA Region IV sediment screening values. Four target analytes had detected concentrations above their respective ER-L values (antimony, lead, mercury and zinc). Antimony, mercury and zinc are retained for the chemicals of potential concern list. Lead is not retained because only 3 of the 21 samples exceeded the ER-L values, and all the detected concentrations were well within the range commonly found in sediments (U. S. EPA, 1983). Cyanide is also retained because it was detected in five samples; there is no ER-L value listed for cyanide and a common range was not reported (U. S. EPA, 1983). Cyanide was also detected in the surface water samples as described below.

The validated TAL surface water data for the total analyses are summarized in Table 4. Table 4 also lists the respective Federal Water Quality Criteria (freshwater chronic) to assess the potential ecological impact of the detected concentrations. These criteria are reported in the EPA Quality Criteria for Water 1986 (U. S. EPA 1986) and the September 1987 update. Cyanide, mercury and zinc concentrations commonly exceeded the criteria. However, all three of these analytes were already retained on the chemicals of potential concern list based on the sediment data.

Cadmium was detected in two samples at a maximum concentration of 2.2 $\mu$g/l, slightly above the water quality criteria of 1.1 $\mu$g/l. Similarly, lead was detected in two samples at a maximum concentration of 3.8 $\mu$g/l; the water quality criteria for lead is 3.2 $\mu$g/l. Based on these comparisons, and the infrequent detection of the two analytes (in two of 12 samples), cadmium and lead are not retained on the chemicals of potential concern list.

Summary

Based on the sediment and surface water data and the discussion presented in this section, the following are listed as chemicals of potential concern for the ecological assessment:

| Inorganic Constituents | Organic Constituents |
|---|---|
| Antimony | Chloroform |
| Cyanide | Chlorobenzene |
| Mercury | 1,2-Dichlorobenzene |
| Zinc | 1,3-Dichlorobenzene |
| | 1,4-Dichlorobenzene |
| | 1,2,4-Trichlorobenzene |
| | Hexachlorobenzene |
| | Pentachlorobenzene |
| | Pentachloronitrobenzene |
| | 4,4'-DDT |
| | 4,4'-DDD |
| | 4,4'-DDE |

The chemicals of potential concern list was developed as a basis for the second phase of the ecological assessment. Further evaluation of the relative risk associated with these chemicals will be conducted as part of the exposure assessment and toxicity assessment. Based on the site characterization data showing the distribution and concentrations of these chemicals, it is anticipated that mercury, hexachlorobenzene and DDT compounds will drive any ecological risks that are identified, and that any risk associated with the other constituents on the list will be relatively insignificant.

# SAMPLING OF BIOTA AND ECOLOGICAL EVALUATION

## 3.1 METHODS

### 3.1.1 Plant Community Structure/Vegetative Stress

Major goals of the vegetative stress survey were to characterize the principal macrophytic plant communities and to identify indications of possible vegetative stress, with particular focus on possible correlations with the distribution of contaminants or other stress factors in the basin. For these purposes, quantitative vegetation sampling and a detailed ground survey for endangered and threatened plant species were performed in September 1991.

Ten transects were established at approximate 500-foot intervals, roughly perpendicular to the Tombigbee River across OU-2 on 90° magnetic compass headings. The dirt road running along the top of the bluff on the west side of the basin was used as the starting point for each transect. The number and spacing of transects were based on the results of the preliminary survey to provide coverage of all suspected community types and areas of the basin.

Several "Releve" sampling sites were established in the vicinity of transects and used to provide a general determination of vegetation characteristics within the basin. Releve sites were subjectively chosen to represent characteristic vegetation types within each portion of the basin. These data were then used to define community types within OU-2 in terms of structure, location, and ecological characteristics (i.e., relative elevation and hydroperiod). Species presence data were also gathered to prepare a plant species list and to further evaluate the adequacy of the quantitative sample size.

Quantitative vegetation sampling was done on a stratified, random basis. Each transect was divided into 400-foot intervals. One quantitative sampling site was established within each segment on each transect using a random numbers table to select the location. Sites were further randomized by off-setting sites from the transect baseline within an interval of 100 feet on either side of the transect based on a random numbers table. A total of 56 sampling points resulted from this array (Figure 7).

Sampling methodologies for the various plant strata were as follows:

Overstory trees: all overstory trees (woody plants with stem diameters equal to or greater than 10 cm at 1.4 m aboveground (Diameter at Breast Height [DBH]) rooted within 3.59 m radius (0.01 acre) circular plots) were sampled. The numbers of trees by species were recorded, as was the DBH of each tree. The percent canopy coverage within each plot was estimated visually.

Understory trees: all understory trees (woody plants with stem diameters equal to or greater than 2.5 cm and less than 10 cm DBH) were sampled identically to the overstory trees.

Shrubs and vines: all shrubs and woody vines (woody plants with stem diameters less than 2.5 cm or less than 1.4 m in height) were counted by species within each 0.01-acre plot. Canopy cover was also estimated visually as a percent of the ground covered by the canopy overhang.

Herbaceous plants: all non-woody plants were sampled within three 0.36-m (0.0001-acre) circular quadrats within each plot. One quadrat was located at the center of the larger plot, and two were located at the outer edge of the plot along a line parallel to the transect. Cover by species was estimated visually within each quadrat, and the number of plants was counted by species. For prostrate plants, the number of rooting nodes was counted, and for matted grasses, the number of culms was counted as individual plants. When the number of plants of a species within a quadrat was large, a fraction of the quadrat was subsampled to reduce the counted number to less than 100. Results were then expressed on a conversion to the area of the quadrat.

Each sampling site was assigned to one of the community types defined on the basis of the preliminary survey and the releve sampling. Data were summarized by community type as an average of the sampling sites assigned to that type. Tables were prepared for the overstory and understory strata, listing density per acre, basal acre per acre, percent canopy coverage, and frequency of occurrence. Basal area was defined as the area in square feet occupied by a cross-section of the trunk at 1.4 m height. Frequency was defined as the percentage of sites at which species occurred. Relative density, relative cover, relative basal area, and relative frequency were determined for each species by dividing the appropriate value for each species by the total values for all species and multiplying by 100 to express the result as a percentage.

For shrubs and herbs, cover, density, and frequency were determined for each species. Frequency for herbs was defined as the percentage of subquadrats in which that species was found, while for the other strata it was defined as the percentage of plots in which found. Relative density, relative cover, and relative frequency were computed for shrubs and herbs.

The Importance Percentage (IP) was determined for all species in each stratum. IP for overstory and understory trees was defined as the mean of the combined relative density, relative basal area, and relative frequency values, expressed as percentages. For shrubs and herbs, the IP was determined as the mean of the relative density, relative cover, and relative frequency.

At each releve site, quantitative sampling plot, and at appropriate habitat locations noted in the vicinity, detailed searches were made for listed endangered and threatened plant species. These surveys were to augment those conducted during a preliminary site walk-over.

The principal taxonomic reference for plant species nomenclature and identification was the two-volume set, Aquatic and Wetland Plants of the Southeastern United States (Godfrey and Wooten, 1981). Other major sources included Trees of Northern Florida (Kurz and Godfrey, 1962), Manual of the Vascular Flora of the Carolinas (Radford et al, 1968), Common Marsh Plants of the United States and Canada (Hotchkiss, 1970), and Knowing Your Trees (Collingwood and Brush, 1947).

To evaluate potential indicators of vegetative stress in the basin, vegetation condition was noted at all Releve and quantitative sampling locations, as well as along transects and other locations as appropriate. Factors pertaining to vegetation stress or mortality were noted, as were factors relevant to successional trends, indications of disturbance or discontinuities and abnormal species and physical characteristics. Among the factors considered were the following:

a. Dead plants or portions of plants (observations included species affected, size of trees affected, portions and percentages of plant affected, color on remaining portion, and estimated time since effect may have occurred)

b. Abnormalities in leaf size, shape, developmental process, or color

c. Abnormal patterns of branching, twig development, internode length, bud development, or growth form

d. Presence of invasive or exotic species or of parasitic insects and other species indicative of disturbed conditions

e. Evidence of insect or disease damage, or of damage by other natural factors such as fire or flood

f. Evidence of hydrologic conditions such as water marks, lichen and moss lines, buttressing of trees, sedimentation or erosion, debris lines, and channelization

g. Indications of man-made alterations, including cutting of trees, scraping or clearing of ground, harvesting of resins or other materials

h. Abnormalities of substrate materials, including artificial materials, coloration, grain sizes, and other features

i. Successional trends, such as the presence or absence of young individuals of dominant or canopy species, over-representation or under-representation of certain species in various strata, and signs of seeds or reproduction in various species

### 3.1.2 Terrestrial Vertebrate Survey

The occurrence and relative abundance of terrestrial/amphibious vertebrates (amphibians, reptiles, birds, and mammals) in OU-2 was evaluated through a review of the literature and the observations of an experienced local ecologist, Dr. David H. Nelson of the University of South Alabama, as well as observations of WCC biologists. Zoogeographic references (e.g., Imhoff 1976, Mount 1975) were used to develop faunal lists (Appendix B) that were annotated based on Dr. Nelson's experience and a site visit made in early November, 1991. Some species were directly observed by Dr. Nelson and/or WCC biologists, while the presence of others was confirmed by indirect observations (e.g., bird calls, tracks, scat, nests).

### 3.1.3 Benthic Macroinvertebrates

A study of benthic macroinvertebrates in the basin and lower reaches of the former effluent ditch was undertaken to assess potential impacts of contaminated sediments on the aquatic biota. Triplicate samples of benthic macroinvertebrates were collected at 22 stations (Figure 8) on November 6-7, 1991. Each replicate sample was collected with a standard (6-inch by 6-inch) stainless steel Ekman grab dredge deployed from a small boat. The contents of each grab (replicate) were emptied into a rectangular pan, after which portions were poured into a No. 60 (250 $\mu$m mesh) large-capacity polyethylene sieve and gently agitated until most fine sediment and other particles were removed. Once the entire sample had been washed in the sieve, the retained materials were placed in a labelled plastic bag and preserved with 10 percent formalin containing phloxine-B, an histological stain used to facilitate recognition of benthic animals among extraneous materials.

Prior to disturbance of the sediments at each station, a Hydrolab™ instrument was used to measure in situ pH, specific conductance, temperature, and dissolved oxygen concentration of the water directly above the basin bottom. Depth was also measured (by sounding) and depth measurements recorded for each sampling station.

At each station, three additional replicate grab samples of sediments were collected immediately following the three replicates for the benthos. Two entire sediment samples (no sieving) were placed in labelled plastic bags and cooled on ice until shipment for grain-size analysis. A portion of the homogenized third grab sample was placed in a labelled glass jar and submitted under chain-of-custody to the analytical laboratory for determination of total organic carbon (TOC) concentration.

All remaining samples of sediments and invertebrates were sent to the WCC ecological laboratory in Franklin, Tennessee, for processing. The sediment samples were air-dried and shaken through a graded series of testing sieves using a mechanical shaker. The contents of each sieve were weighed and percent composition by grain size was determined using the Wentworth Scale (as described by Folk 1974).

Each sample of benthic macroinvertebrates was washed in a 250 $\mu$m mesh sieve to remove excess sediment and formalin. Small aliquots of the sample were placed in a gridded petri dish and examined using a stereomicroscope. All of the benthic invertebrates were counted, removed, and placed in 2-dram vials of 70 percent ethanol. This procedure was repeated until the entire sample had been examined. Ostracods (seed shrimps) were counted, but only the first 100 individuals were removed to vials. Thirteen (20 percent) of the total number of samples were re-sorted as a QA/QC check on processing. The acceptance criterion for the QA/QC check was that the number of organisms found by any technician could not vary by more than 10 percent of the total number. If this criterion was not met, all samples processed by that technician were to be re-sorted. Results from the initial QA/QC checks on sample sorting indicated that several of the samples did not meet the 10 percent error limit. Consequently, all samples were re-sorted. A second check revealed that all samples met the 10 percent criterion.

Most major groups of invertebrate taxa were identified to the generic level. Exceptions were Oligochaeta (species), Planariidae (family), Nematoda (phylum), Hirudinea (class), and Decapoda (order). Oligochaetes and chironomid larvae were mounted on microscope slides using CMC-10 mounting medium. Both of these groups were subsampled if there were more than 75 individuals. About 50 individuals were selected randomly; the number was recorded on both the sort/identification sheets and on the slide label. Voucher specimens of invertebrates were sent to outside experts for verification of identifications.

The basic information on identities and numbers of benthic macroinvertebrates collected per unit area was tabulated and certain associated statistics (e.g., arithmetic means) were calculated for use in comparisons. Other observations included the numbers of oligochaetes with aberrant chaetae and the generally recognized (open literature) levels of tolerance to pollution for other taxa. The data were subsequently examined using CLUSTER and SIGTREE analyses. CLUSTER is a similarity index using the Bray-Curtis coefficient with unweighted average linkage and the distance linkage scale. The program groups replicates according to both taxonomic composition and abundance to determine their similarity. The data were then subjected to SIGTREE, which determines the significance of the clusters, indicating the level of branching which constitutes a significant grouping. An hypothesis is formulated to test statistically whether two clusters within the overall cluster analysis results are sufficiently alike that they represent the same community. The following data matrices were subjected to SIGTREE analysis:

- Total benthic macroinvertebrates
- Benthic macroinvertebrates excluding ostracods and Chaoborus
- Number of oligochaetes
- Number of chironomid larvae
- Number of ostracods
- Number of Chaoborus (phantom midges)
- Mercury concentration (from Phase I sediment samples at benthic sample locations)
- Depth

COMPTRE compares two clusters (also called dendrograms or trees) to determine if they are related or if the clusterings are random. This program can be used to test the relationship between the benthic macroinvertebrate observations and any other available measurements (e.g., sediment chemistry, grain size, water quality). Comparisons using COMPTREE were made of the following:

- Depth and ostracods
- Depth and Chaoborus
- Depth and benthos excluding ostracods and Chaoborus
- Mercury and benthos
- Mercury and benthos excluding ostracods and Chaoborus
- Mercury and oligochaetes
- Mercury and chironomid larvae

### 3.1.4 Fish Studies

The main objective of fish sampling activities in the basin was to obtain tissues for contaminant analyses from a species at the top of the aquatic food chain (largemouth bass) as well as from a bottom-dwelling, bottom-feeding species (bullheads or catfish). The target species were selected to provide for hypothetical worst-case concentrations due to bioaccumulation, in addition to providing fish likely to be consumed by humans and wildlife. A further consideration was to attempt to use fish that would be indigenous to the basin area, focusing on lacustrine (lake-dwelling) fish species, particularly those inclined toward minimal migratory movements (hence the ideal strategy of using bullheads, if available). During efforts to collect the target species, observations were recorded on the numbers and sizes of all other fish collected. The purpose of these observations was to provide information on basin fish communities under nonflood conditions.

Sampling of fish in the basin was performed on November 4-8, 1991. Methods used during this period were:

- Hoopnets; 3-foot and 2-foot diameter, baited with commercial catfish cheese; seven nets were fished for an aggregate total of 377 net-hours

- Gillnets; 200-foot by 8-foot, 2-inch bar mesh nylon and 100-foot by 6-foot, 1-inch bar mesh nylon; two of each type fished overnight (average of 21 hours) for an aggregate total of 84 net-hours

- Electrofishing; 75 to 106 AC volts delivering 7 to 9 amps; three runs of 38 to 55 minutes along upper west shore of basin (2.2 hours total); three runs of 40 to 55 minutes along north shore of basin (2.3 hours total)

Alternating current (AC) was used during shocking to increase the chances of stunning catfish, although this ultimately produced only one specimen. Hoopnets were very ineffective on fish in general, which was attributed at least in part to unseasonably cold weather. A decision was made on the third day to deploy gillnets to obtain catfish; by that time only one channel catfish had been captured, whereas all but one of the required 22 largemouth bass specimens had been secured by shocking.

Specimens of target species were not taken in hoopnets. The few fish caught in these nets were removed, identified, measured (total length), weighed, and released.

Gillnets yielded 21 of the channel catfish and one largemouth bass later processed for tissue analysis and aging. These fish were removed from the nets and stored on ice until processing, at which time their lengths and weights were measured. All other fish taken in the gillnets were identified, measured, and weighed. They were then either released back into the basin if they appeared likely to survive or (as was the case with most specimens of most species) disposed of by burial in a covered pit.

Electrofishing yielded 21 of the largemouth bass and one channel catfish later processed for tissue analysis and aging. These fish were dipnetted and stored on ice until processing. An effort was made to identify and count all other fish that were stunned. An experienced ichthyologist familiar with southeastern U. S. fishes noted the identities and counted individuals, relaying the information verbally to a note-taker with specially designed forms. When a specimen's identity was uncertain, it was dipnetted, examined, and immediately released. In a few cases (estimated to be fewer than 25 specimens in aggregate) an unidentified fish could not be caught; in such instances no effort was made to guess the identity and the fish was not tallied. For all species other than the particularly abundant bluegill sunfish, the counts were considered to be accurate within ±1 percent. Bluegill tallies were probably accurate within ±10 percent, since there was almost certainly some double-counting because of large aggregates and multiple electroshocking runs.

Processing of the largemouth bass and channel catfish was performed in accordance with Section 5.2.6 of the revised SAP (October 1991). Briefly, each individual was assigned a unique code number for identification and then 11 specimens of each species were prepared for whole body analysis and 11 were prepared for fillet analysis. Specimens for whole body analysis were wrapped in aluminum foil (shiny side out), labeled, and placed on ice for shipment to the analytical laboratory. Entire fillets were taken from both sides of each fish to be filleted, and the pair of fillets was placed in a labeled glass jar to be placed on ice for shipment. The scaled skin was left on the largemouth bass fillets, whereas it was removed from catfish fillets. Prior to processing, otoliths ("ear-stones") and scales were removed from each largemouth bass, and pectoral spines were removed from each catfish. These hard parts were placed in coded coin envelopes for subsequent use in age determination.

Two samples (one whole body, one pair of fillets) of each species were provided to the EPA Oversight Contractor for independent analyses. The remaining 40 fish samples were sent under chain-of-custody to Hazleton Environmental Services, Madison, Wisconsin, for analysis of chlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,2,4-trichlorobenzene, pentachlorobenzene, hexachlorobenzene, pentachloronitrobenzene, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and percent lipids. Hazleton Laboratory prepared aliquots of the fish samples and submitted these aliquots to Olin's laboratory in Charleston, Tennessee for total mercury analysis. A rinsate blank from several of the stainless steel knives used in fish processing was also submitted to the analytical lab.

### 3.1.5 Ecological Endpoints

As noted above, selected observations and/or statistical analyses were incorporated in the studies of vegetation and benthic macroinvertebrates to document evidence of impacts of environmental contaminants. For example, the benthic macroinvertebrate data were analyzed in various ways to determine if there were discernible relationships between taxonomic composition and densities (numbers per grab) and the concentrations of mercury in the sediment. An attempt was also made to relate the occurrence of chaetal aberrations in segmented worms (oligochaetes) to mercury concentrations. Similarly, a qualitative assessment was made of the occurrence and relative abundance of taxa generally recognized in the scientific literature as either pollution sensitive or tolerant.

The studies of fish and terrestrial/amphibious vertebrates were not intended primarily to generate direct evidence of impacts. Rather, they were designed to characterize degrees of bioaccumulation at key (worse-case) levels in the aquatic food chain and provide a basis for extrapolating to potential exposures to amphibious and terrestrial consumers, including humans. Some of the information gathered, however, can be used to evaluate the relative well-being of individuals, populations, and communities compared to regional norms or observations made by experienced observers in similar ecological systems. For example, the lengths and weights of various fishes can be used to calculate an index known as "condition factor" which may be compared to those expected on a regional basis for the respective species.

This condition factor or ponderal index is based on the presumption that the weight of a fish varies with the cube of its length, provided that the general shape and the specific gravity of the fish remain the same. Thus, as described by Carlander (1969) in his classic Handbook of Freshwater Fishery Biology, a change in the relative plumpness of a fish results in a change in the value "c" in the formula:

$$W = c \times L^3$$

where W = weight in metric or English units, L = length in like units, and c = coefficient of condition. This formula has been reconfigured to describe the condition of a fish, as follows:

$$K = \frac{W \times 10^5}{L^3}$$

where K = coefficient of condition, W = weight in grams, L = length in millimeters and $10^5$ is a factor to bring the value of K near unity.

K values are reported according to the type of length measurement used on the fish [e.g., standard length (SL) or total length (TL)] resulting in condition factor designations such as K-TL or K-SL. Standard length (SL) is the distance in a straight line from the anteriormost part of the fish's snout or upper lip to the posterior end of the vertebral column. Total length (TL) is the greatest distance in a straight line from the tip of the head to the tip of the tail when the fin rays are squeezed together.

As in the case of the vascular plants and benthic macroinvertebrates, the presence/absence and (in limited cases among the fish) relative abundance of certain fish and higher vertebrates can be considered as a general indication of stress or perturbation. That is, were any fishes conspicuously absent that (in the experience of a qualified fisheries biologist) should have been caught with the methods used?

## 3.2 RESULTS

### 3.2.1 Vegetation

Community Composition

Six vegetation or land cover types were identified within OU-2 as illustrated in Figure 9 and Table 5. Cover types mapped include Ponds and Streams, Semi-permanently/Permanently Flooded Bottomland Forest, Temporarily Flooded Bottomland Forest, Successional Shrub-dominated Bottomland Areas, Herbaceous Bottomland Areas, and Mixed Hardwood/Pine Upland Forest.

A total of 133 species of vascular plants were recorded from OU-2 (Table 6), all but 22 of which were recorded from within the sample plots. Twenty species were recorded in the semi-permanently flooded bottomland forest, 64 in the temporarily flooded bottomland forest, 33 in the mixed upland forest, 40 in the shrub zone, and 26 in the herbaceous zone.

The pond and stream land cover types include the lake and ponds within the basin and the streams and ditches connecting them to the river and upland areas. Vascular emergent vegetation is very sparse within these areas. Bald cypress (Taxodium distichum) and great duckweed (Spirodela polyrhiza) were the only hydrophytic species occurring in any abundance within the permanent bodies of water. In most cases, areas containing these species were mapped as semi-permanently flooded bottomland forest rather than as ponds and streams.

The floodplain between the bluff on the west and the Tombigbee River on the east is composed primarily of mixed bottomland hardwood forest that varies in terms of flooding duration and species composition. This floodplain community has been named and classified in numerous ways in several classification schemes presented by different authors. The classification used in this report follows that of the U. S. Fish and Wildlife Service (1986) in its Preliminary Natural Resource Survey of the Olin McIntosh Plant Site. This interpretation splits the floodplain forest into "temporarily flooded bottomland hardwoods" and "semi-permanently flooded bottomland hardwoods."

The semi-permanently flooded bottomland hardwoods were defined (USFWS, 1986) as occurring in areas that are flooded all of the dormant season in most years and in some years through part of the growing season. Species diversity is limited in these areas due to the long hydroperiod. It appears that several of the areas adjacent to the basin and other floodplain ponds are regularly flooded throughout most or all of the growing season as well. Because of the similarity of vegetation and the limited extent of the permanently flooded wetlands, the permanently flooded wetlands have been included in the semi-permanently flooded bottomland category for this study. This community type has been described by other authors as "bald cypress-tupelo gum swamp," "prolonged flooding freshwater swamp,"and "deep freshwater swamp." In the basin, bald cypress is the dominant species, with overcup oak (Quercus lyrata), tupelo gum (Nyssa aquatica), and water elm (Planera aquatica) as the main associates.

Most of the floodplain forest of OU-2 consists of temporarily flooded bottomland hardwoods. Species diversity is much higher in this community due to the decreased hydroperiod and a greater variety of micro-habitats. Dominant trees include sycamore (Platanus occidentalis), bald cypress, cherrybark oak (Quercus falcata var. pagodaefolia), water hickory (Carya aquatica), hop hornbeam (Ostrya virginiana), and water oak (Quercus nigra). Other common species in the cover type are black gum (Nyssa biflora), sweetgum (Liquidambar styraciflua), overcup oak, American elm (Ulmus americana), and sugarberry (Celtis laevigata). Understory and shrub species include ironwood (Carpinus carolinianum), Walter viburnum (Viburnum obovatum), persimmon (Diospyos virginiana), water elm, winterberry (Ilex verticella), and swamp privet (Forestiera acuminata).

In general, bald cypress, black gum, and water hickory are found in the lower areas along channels and in old swales and oxbows. Oaks, sugarberry, American elm, and hop hornbeam are generally found on old levee structures and other areas that are raised from 2 to 6 feet above the channel elevations. Sweetgum and sycamore occur predominantly in the southern part of the basin along the Tombigbee River and along the discharge ditch from the plant.

The mature canopy of overstory and/or understory trees is absent in many parts of OU-2. Shrub-dominated and herbaceous-dominated areas are generally concentrated in the low terrace along the river, along the northern end of OU-2, and near the mouth of the discharge ditch. The shrub-dominated sites in most areas generally contain the same species as the temporarily flooded bottomland forest, but mature woody plants are sparse or absent. Water elm and swamp privet are the most dominant species, but winterberry, hop hornbeam, and sugarberry are also abundant. In most sites, a single species forms a dense, almost monospecific stand with few herbaceous plants present. Most of these areas appear to be in a stage of primary or secondary succession, although there is little evidence (such as stumps) of past tree growth.

The herbaceous-dominated areas are also concentrated along the northern end of OU-2 and along the river. Additional areas occur along the southwest side of the basin. There a deposition delta has developed along the former discharge ditch and on the east side of the basin in an area which shows signs of past clearing and scraping of topsoil. The east boundary of the cover type runs along the Ciba-Geigy discharge right-of-way, which is also maintained in a shrub and herbaceous stage.

Substantial variation in species composition occurs in the herbaceous-dominated sites. In the north end of OU-2, sedges (Cyperus spp.), sprangletop grass (Leptochloa filiformis), and jacquemontia (Jacquemontia tamnifolia) are the most abundant species. In the cleared areas east of the basin spangletop, bladderpod (Daubentonia punicea), and sicklepod (Cassia obtusifolia) dominate the ground cover. Sprangletop appears to be common throughout OU-2, while jacquemontia appears common mainly in disturbed wooded areas in the northern section of the basin. Bladderpod and sicklepod are common on what appear to be recent exposed or developed soils along the river and in depositional areas. These two species are both legumes with some degree of nitrogen fixing capability.

The slope of the bluff on the west side of OU-2 is vegetatively similar to the temporarily flooded bottomland forest, but it contains several species which are restricted to upland or well-drained sites. This community is a mixed hardwood/pine upland forest. There are few pines along the slope of the bluff, but pines are numerous along the top of the bluff. Ironwood, and sourwood (Oxydendron arborea) are the most abundant species. Sourwood, water oak, overcup oak, beech (Fagus grandiflora), southern red oak (Quercus falcata), loblolly pine (Pinus taeda), and sweetgum are common associates. In the understory, sweetleaf (Symplocos tinctoria), sparkleberry (Vaccinium arborea), and winterberry are also common.

Community Structure

Tables 7 through 10 summarize the characteristics of the overstory and understory strata from the plots sampled. The mixed upland forest is represented by two plots along the bluff. The temporarily flooded bottomland is represented by 21 plots; the semi-permanently flooded bottomland by nine plots; the shrub zone by ten plots; and the herbaceous zone by seven plots. Seven plot locations were in permanently flooded ponds, where vascular plants were not found.

The density and cover of overstory or canopy trees appear to be similar in the semi-permanently flooded bottomlands (density 211 trees/acre, cover 25 percent) and the temporarily flooded bottomlands (density 143 trees/acre, cover 27 percent). There is a large difference in basal area/acre (517 $ft^2$ vs. 84 $ft^2$). Although the increased buttressing of trees in the semi-permanently flooded zone affects the total basal area, it does not appear to account for all the difference. Understory cover, density, and basal area are all greater in the temporarily flooded area. Density of understory trees and shrubs is substantially higher in the shrub-dominated areas than in any of the more mature forest types.

Overstory and understory density and cover are higher along the bluff than in the bottomland, but basal area is lower. This is indicative of a greater abundance of small understory and shrub plants in the upland community that is less subject to flooding and the scouring conditions of the bottomlands.

Endangered and Threatened Plant Species

Table 11 shows eight federally listed plant species whose ranges and habitat types overlap those found in OU-2 as identified by various literature sources. None of these species was found within the basin during the field surveys.

Vegetative Stress Survey

The distribution of vegetation types within OU-2 generally follows a pattern expected for such a site. Early successional herbaceous and shrub-dominated zones occur along the lower terrace along the Tombigbee River to the southeast of the basin. The zonation of these communities generally is perpendicular to the river, representing a pattern of active terrace and levee development in close proximity to the river. The species found in these zones include black willow (Salix nigra), swamp privet, and water elm, all of which are typical of stream or riverbank zones which are subject to periodic flooding and scouring. Most of the herbaceous vegetation consists of annual species and grasses and sedges commonly found along such periodically inundated areas. The presence of high concentrations of leguminous plants may be an indication of the youth and low nutrient retention capacity of these soils.

A successional gradient from an herbaceous zone through a shrub zone to a mature hardwood forest also occurs on the delta at the southwest end of the basin. This pattern is consistent with the gradual buildup of sediments at the mouth of the former discharge ditch, and appears to represent a normal successional pattern for newly exposed land. Numerous woody species are invading the shrub and herbaceous zones progressing northward within this delta. In particular, there is a gradient of bald cypress tree size from large to small, indicating continued invasion northward through the delta into the herbaceous-dominated zone. The bald cypress in this delta appear to be healthy without signs of stress. There is little evidence of previous forest stands on this delta.

Although the aforementioned successional areas south and southeast of the basin have the appearance of disturbed lands, they do not show evidence of stresses other than those normally associated with active riverine or streambank areas.

The temporarily flooded bottomland forest, semi-permanently flooded bottomland forest, and mixed upland forest all appear to be typical of these types within the region in terms of species composition and structural characteristics. Signs of stress and disturbance to vegetation are apparent, however, at several locations within the basin. Numerous cypress stumps found along Transects 1 and 2 indicate that the northern end of OU-2 was logged at one time. Few stumps were noted south of Transect 2. The herbaceous-dominated area at the north end of OU-2 showed evidence of prior cypress domination. In addition to cut cypress, numerous standing dead cypress occur in the north end. Many of the trees appear to have been dead for many years; however, recent mortality of younger trees was also noted.

Some die-back of the upper portions of some cypress trees was noted in OU-2. The highest incidence of die-back and frequency of affected trees was found in the northern end of the basin. The only apparent effects in the southern half of OU-2 seem to be die-back in a few cypress trees on the east side of the basin near Transect 7. A few dead oaks are present in the central and north-central portion of OU-2. Significant, abnormal or unexplained stress does not appear to be present in other species or other areas of the basin. Insect and disease damage, including webworms, chewing insects, and rusts, were noted at scattered locations.

Dead trees in the northern part of OU-2 show some evidence of fire on the lower portions of the trunks. There is also some evidence of fire or similar effect on the ground surface. Some debris showing signs of melting or scorching is also present in the northern end of the basin. Thus, much of the apparent damage in the north end of OU-2 may be due to a fire.

Vascular vegetation is absent from the bed of the current wastewater discharge ditch throughout virtually its entire length. Vegetation grows downslope to the water's edge in many areas, but emergent and submergent vegetation is absent. The salinity of the water in this ditch probably accounts for the absence of vegetation.

Other than the effects mentioned above, vegetative conditions throughout OU-2 appear to be good, with normal vigor and color. Additional significant deformities or indications of altered plant growth does not appear to be present in the vicinity of the basin.

### 3.2.2 Terrestrial/Amphibious Vertebrates

Lists of amphibians, reptiles, birds, and mammals known or expected to be present in OU-2 are presented in Appendix B. Many of the strictly terrestrial vertebrates (e.g., some reptiles, most mammals) probably occur in the floodplain area only as dry-season transients.

At least 36 species of amphibians are likely to be present, among which four salamanders, one "true" toad, and eight frogs are probably common. During the 1991 field work, a southern toad (Bufo terrestris), several bullfrogs (Rana catesbeiana), a bronze frog (R. clamitans), and a few leopard frogs (R. sphenocephala) were observed. Since most of the active field work by biologists occurred in November, during a period dominated by a cold front, the limited sightings of amphibians was not surprising. Adults of the mole salamanders (Ambystoma) and the woodland salamanders (Plethodontidae) are terrestrial and are very cryptic, typically living under logs or similar objects in damp areas. Much of the floodplain area of OU-2 appears to provide suitable habitat for these animals. The remaining salamanders are essentially aquatic throughout their lives and, with the exception of the eastern newt (Notophthalmus viridescens), are seldom encountered anywhere in great numbers. Newts occasionally are found in high densities in weedy ponds, but such habitats do not occur in OU-2. The methods used for fish sampling in this study were not conducive to capturing salamanders.

Sixty kinds of reptiles are known or expected to occur in OU-2, among which five turtles, five lizards, 11 snakes, and the American alligator are probably common and abundant at least seasonally. On warmer days during field activities, numerous slider turtles (Trachemys scripta) were observed in and around the basin, especially "basking" on logs. Several sliders and one stinkpot (Sternotherus odoratus) were caught in hoopnets or gillnets. Green anoles (Anolis carolinensis) were commonly seen in the summer and early autumn in shrubs and on trunks of trees. Fence lizards (Sceloporus undulatus) and ground skinks (Scincella lateralis) were occasionally observed, the former around brush piles near cleared areas (e.g., roadside) and the latter mainly among leaves on the forest floor. Water snakes (all positively identified were Nerodia fasciata) were frequently observed swimming around the margins of the basin or basking near/over the water; several were stunned during electrofishing. Several sightings were made of what was believed to be the same small adult alligator.

More than 200 species of birds, including many seasonal or occasional migrants, are expected to occur in OU-2; perhaps as many as 80 of these are likely to be common at times. Thirty-three species were seen or heard during field activities. Several fish-eating species were observed (e.g., cormorants, herons, egrets, belted kingfisher); at least one of these species will be selected to develop a model of predicted exposure to site constituents through ingestion. Selection will be based on apparent local relative abundance and availability of published information on relevant parameters, such as foraging territory and ingestion rates. Results will be presented in the second phase of the ecological assessment which will be provided in the baseline risk assessment.

Forty-seven species of mammals are known or likely to be present, about half of which are probably common during nonflood periods. Direct sightings or "signs" were recorded for opposums (Didelphis virginiana), armadillos (Dasypus novemcinctus), swamp rabbit (Sylvilagus aquaticus), gray squirrel (Sciurus carolinensis), beaver (Castor canadensis), cotton rat (Sigmodon hispidus), gray fox (Urocyon cinereoargenteus), raccoon (Procyon lotor), and deer (Odocoileus virginianus). Although their presence was not confirmed by sightings or indirect evidence, mink (Mustela vison) and otter (Lutra canadensis) are expected to be present; since they are known to be piscivorous, one will be selected for consideration of predicted exposures through a modeling approach.

None of the terrestrial/amphibious vertebrates observed (directly or indirectly) was unexpected. Lack of sightings or evidence of forms expected to be present is probably attributable, in all cases, to the level of effort expended to meet the data quality objective. Many of the birds, as noted, are only expected as seasonal transients. A concerted study of the terrestrial fauna was not in the scope of the amended work plan. In the opinion of Dr. Nelson and WCC field biologists, ample habitat in apparent good condition is available in the floodplain areas of OU-2 for the expected species.

Mount (1986) discussed vertebrate animals of special concern in Alabama. Of the vertebrates that are endangered or threatened in the state, only the American alligator (Alligator mississippiensis) is definitely known to occur in OU-2. A small individual was observed during the fisheries reconnaissance in July 1991, and additional sightings were made of the same individual and perhaps other alligators during subsequent field work. Olin employees report numerous "routine" sightings in the basin, some apparently involving different (larger) individuals. Although the eastern cougar (Felis concolor) might occur in the type of habitat found in OU-2, the probability is very low because the species requires extensive areas of undisturbed land over which to roam. The existence of industrial, commercial, and residential areas relatively near the basin is likely to deter the occurrence of cougars. For the same reason, it is unlikely that bald eagles (Haliaeetus leucocephalus) would appear very frequently, if at all, in OU-2. Since alligators are present and bald eagles are probable (albeit infrequent) visitors to the basin, and since these two species are known to consume fish, an appraisal of their potential exposure to OU-2 contaminants will be included of the second phase of the ecological assessment which will be provided in the baseline risk assessment.

A few other species of special concern are known from the general region of the state, but their particular habitat requirements are not readily available in OU-2: gopher tortoise (Gopherus polyphemus), eastern indigo snake (Drymarcon corais), black pine snake (Pituophis melanoleucas lodingi), and the red-cockaded woodpecker (Picoides borealis). The gopher tortoise and black pine snake are listed as "expected" in Appendix B mainly because OU-2, as defined, encompasses limited upland areas that might contain some marginal habitat.

### 3.2.3 Benthic Macroinvertebrates

Water quality characteristics near the sediment-water interface during benthic sampling are shown in Table 12. Water depth was extremely variable, ranging from 1.5 inches to about 25 feet at the sampling stations. SIGTREE analysis (Figure 10) shows five distinct depth groupings, with the shallowest areas in the northwest and south/southwest, and the deepest areas in the northern central portion of the basin (see also Figure 4). The southern and eastern portions show a gradual increase in depth, while slopes along the western and northern margins are much steeper. The other characteristics observed were fairly consistent among stations, except for conductivities at G2 and BD03, which were substantially higher and lower, respectively, than those at other stations.

Sediment particle size analysis results (Table 13) indicate that the substrate at most of the stations was composed entirely of silt/clay. Sediments from E2 and F4 were predominantly sand, and those from I10 contained large amounts of detritus (leaf particles, twigs, shell fragments). Results of SIGTREE analysis indicated four distinct groupings of sediments – namely, those from E2 and F4, those from F10, those from I10, and those from all remaining stations.

For the assessment of potential impacts, the benthic macroinvertebrate data were compared to hexachlorobenzene and mercury concentrations in the sediments. Nine stations had quantifiable concentrations of hexachlorobenzene (Table 12), the highest at E2 (265 mg/kg) and the lowest at H4 (0.5 mg/kg). With the exception of I10 (northeastern corner), all quantifiable hexachlorobenzene concentrations were in the southern portion of the basin. Sediments from the two stations with the highest hexachlorobenzene levels, E2 and F4, were composed mostly of sand. Another location where sand was prominent (I10) also had quantifiable hexachlorobenzene. Statistical analyses were not performed with the hexachlorobenzene data because of the high incidence of nondetects, but inspection of the data does not suggest any relationship between hexachlorobenzene levels and benthic composition and distribution.

Mercury was detected at each of the macroinvertebrate stations. Therefore SIGTREE and COMPTREE analyses were performed utilizing the mercury concentrations and macroinvertebrate data. Mercury concentrations ranged from <1.0 mg/kg at B10 to

290 mg/kg at I10. The SIGTREE results (Figure 11) indicate that the highest concentrations tended to be in the eastern/northeastern section and extended in a westerly/southwesterly direction. Relatively low levels occurred at B10, BD01, BD03, and F8 (all <6 mg/kg).

A total of 83 benthic macroinvertebrate taxa was noted during the study (Table 14), with oligochaetes being the most diverse (25 species). The "high" oligochaete diversity relative to that of chironomids (14 genera) probably reflects the level of practicable taxonomic identification (species for worms versus genera for midges).

A summary of numbers of benthic macroinvertebrates found in each sample appears in Table 15. These data were also used for the COMPTREE and SIGTREE statistical analyses. Four stations, B10, BD01, BD03, and E2, had the largest numbers of individuals (each with >1,500 per station). Five stations — the four with the highest numbers of individuals plus I10 — exhibited the greatest diversity (27-40 taxa), while stations B8 and F8 had the fewest taxa (nine).

Ostracods, oligochaetes, chaoborids, and chironomid larvae had a wide range of total numbers of individuals depending upon the stations. The mean number of ostracods per station ranged from five to 2,880; that for oligochaetes ranged from nine to 359; that for chaoborids ranged from zero to 534; and that for chironomids ranged from zero to 1,078. Examination of these four groups showed that there was an inverse relationship between numbers of ostracods, oligochaetes, and chironomids and depth, and a direct relationship between numbers of chaoborids and depth. Figure 12 shows that the stations with the highest density of ostracods were the shallowest locations, while those with low numbers of ostracods (<34) were all in deeper water. The two shallowest stations (BD01 and BD03) had 2,880 and 1,690 ostracods, respectively. The lowest number of oligochaetes (<31) were found in the deepest parts of the basin and the highest numbers consistently appeared in the shallowest stations (Figure 13). The deepest station (D8) did not have any chironomids and all the other low densities of chironomid larvae were associated with deep stations, while the highest numbers were associated with the shallowest waters (Figure 14). Figure 15 illustrates the direct relationship of Chaoborus densities to depth.

The trend for total number of benthic invertebrates, excluding ostracods and chaoborids due to their dominance, was similar to that for ostracods and oligochaetes (Figure 16). The same was true for number of taxa (Figure 17).

Six clusters of stations resulted from the SIGTREE analysis using the entire benthic macroinvertebrate data matrix (Figure 18). Six clusters, although different in composition, also resulted from the analysis using data excluding the dominant ostracods and chaoborids (Figure 19). The benthos at each station within a cluster was statistically similar, but was different from both the benthos at other stations and within other clusters. An obvious pattern is not evident in these results.

Five distinct groupings of stations resulted from SIGTREE analysis based on the oligochaete data (Figure 20). The oligochaetes from four of the five deepest stations clustered to form one of these groups. Another group that was formed included eight of the 12 sites with mercury concentrations greater than 22 mg/kg/ The other three groups do not appear to reflect any significant relationships to the parameters that were measured.

Generally, the chironomids from the deepest areas clustered (Figure 21), as did those from the stations 1 to 3 feet deep. However, those from station D10 (25 feet deep) were linked by SIGTREE with the otherwise shallow-water group. The chironomids from H5 and H8 (5.5 feet deep) clustered with those from extremely shallow BD01.

Results from the COMPTREE analyses did not indicate any correlations between distribution and composition of total benthos, oligochaetes, or chironomid larvae with mercury concentrations in the sediments.

In addition to the statistical analyses described above, more qualitative observations were made to assess potential relationships between constituent concentrations and the macroinvertebrate populations. The presence or absence of certain "pollution sensitive" macroinvertebrate taxa was used as an indicator of potential impact from chemical constituents. In addition, the oligochaete specimens were examined for aberrant chaetae, which may be an indication of effects from heavy metals.

The number of Aulodrilus pigueti and Dero digitata, generally considered indicative of only slightly or non-polluted sediments, ranged from zero at several stations to 188 at BD01 (A. pigueti) and 28 at E2 (D. digitata) (Table 16). The chironomid Clinotanypus, considered to be sensitive to heavy metals, was found only at stations B10, BD01 and BD03. Mayflies, generally considered to be a fairly sensitive or pollution-intolerant group of benthic invertebrates, were collected only at B10, BD01, BD03, E2, and I10. Station I10 had the highest mercury concentration among benthos stations and E2 had the highest level of hexachlorobenzene. Also considered to be fairly pollution-sensitive are Sialidae (megalopterans), found at BD01 and BD03, and Leptoceridae and Hydroptilidae (caddisflies), found at B10 and E2. Given the factors other than constituent concentrations that can affect the macroinvertebrate populations at the site (e.g., depth, annual flooding, scarcity of detrital material, etc.) definite conclusions regarding relationships between these taxa and chemical concentrations in the sediments cannot be made. Section 5.0 of this EETM outlines the scope for future work that may provide additional data regarding the significance of the numbers of these "pollution-sensitive" taxa that were observed in the basin samples.

The mean number of oligochaetes with aberrant chaetae ranged from zero at several stations to 31 at H8 (Table 16). There were not any consistent patterns of occurrence of oligochaetes with aberrant chaetae, although the largest percentages of aberrations generally occurred in the eastern portion of the basin, where higher mercury concentrations also occurred. The published literature shows relationships between aberrant chaetae and heavy metal concentrations ( e.g., Milbrink, 1983). However, there is not documented evidence to indicate whether chaetal aberrations affect the health of the individual oligochaetes.

In summary, the only definite correlation between benthic composition and distribution within the basin is with depth. Distribution and density of the most abundant groups (oligochaetes, ostracods, chaoborids, and chironomids, collectively comprising 94 percent of all invertebrates found) were highly dependent upon depth. The data do show some evidence that there may be relationships between mercury concentrations and the benthos; however, any distinct statistical relationships were not identified. Factors other than mercury concentrations confound any interpretations. The three stations with the lowest mercury levels <1 to 5.8 mg/kg; (see Figure 11) were among the most diverse, but the sampling depths at these stations were also among the least. As discussed earlier, the station with the highest mercury concentration (I10) had a relatively high diversity (32 taxa). Station I10 was the only location with a noticeable amount of detrital matter, which could help explain the high benthic diversity and presence of certain pollution-sensitive taxa such as mayflies, caddisflies, and some chironomids. The detritus (mostly leaves and twigs) was probably on the surface of the sediments, conceivably allowing the invertebrates to inhabit the area without excessive direct contact with the sediments *per se*.

The scarcity of vegetable detritus throughout the basin is notable. Given the extremely shallow water at several stations (< 1 foot) and the proximity to vegetation on the banks (both trees and herbaceous forms), the sediments were expected to be composed of more organic matter. The general lack of invertebrates known as "shredders" (often major constituents of benthic communities, particularly along the margins, in lentic systems) suggests that the missing detritus was not consumed. Indeed, it appears that the detritus was probably never there, since colonization normally would have occurred if material were available (as at Station I10). This lack implies that coarse particulate organic material (CPOM) which falls into the basin (and any associated fauna) is being washed away at regular intervals.

The lack or scarcity of representatives of such groups as Hydracarina, Amphipoda, Trichoptera, Pelecypoda, and Gastropoda in the basin is unusual for lentic systems in the southeastern United States. Although there was a well-defined relationship between depth and several invertebrate taxa in the basin, the general scarcity of organisms at depths > 10 feet is also atypical for similar systems in the region. However, these observations could be the result of several factors not related to the site constituents, including food availability (e.g., for shredders), physical attributes of the substrates, topography, or location in the floodplain and proximity to the Tombigbee River with its annual flooding (hence "flushing") cycle. Section 5.0 of this EETM outlines the scope for future work that is designed to provide additional data regarding the significance of the macroinvertebrate populations that were observed in the basin samples.

### 3.2.4 Fish

Twenty-three fish species were recorded during the fish sampling activities in the basin November 4-8, 1991. Selectivity of the methods used is emphasized by the fact that more than half of the species recorded were captured (or observed) in only one gear (Table 17). An estimated 812 specimens representing 16 species were recorded during electrofishing, including one channel catfish and 21 largemouth bass which were dipnetted for use in tissue analyses. Bluegill were by far the most abundant species encountered during ele^ctrofishing. Species that were also fairly abundant during shocking were American eel, golden shiner, largemouth bass, and striped mullet. Hoopnets were unproductive, yielding only 28 specimens of three species after nearly 400 hours of fishing. Gillnets caught 208 specimens representing 16 species, including 21 channel catfish and one largemouth bass which were processed for tissue analyses. The most common and abundant fishes taken in the gillnets were quillback, smallmouth buffalo, channel catfish, and striped mullet. The striped mullet was the only species that was relatively common and abundant in any combination of two gears (electrofishing and gillnet), and yet hoopnets did not catch any representatives of the species.

The primary objective of fish sampling for this study was to obtain individuals of only two species for tissue analyses; therefore, the results should not be relied upon as definitive with respect to fish community structure. A combination of the electrofishing and gillnetting results reflects the assemblage of larger fishes existing in the basin under non-flood conditions in late autumn. But the methods are not designed to give good indication of the distribution and relative abundance of smaller species, such as minnows, shiners, pirate perch, killifishes, mosquitofish, brook silverside, and darters (see Appendix B). Electrofishing and coarse mesh (≥1 inch bar) nets are ineffective for collecting or observing large, active aquatic invertebrates such as crayfish and shrimp.

Twenty-two specimens of each of the target species were collected and processed for tissue analyses. One fillet and one whole-body sample of each species were provided to the EPA oversight contractor, leaving a total of 40 samples which were analyzed for this study. Seven of the twelve analytes were reported in at least one of the forty fish samples. Table 18 summarizes the fish sample analyses for these seven analytes. A complete summary of all the analytes and the associated sample quantitation limits is presented in Appendix A.

Chlorobenzene was only reported in one sample (a largemouth bass whole body, LB-E1-03-WB), at an estimated concentration below the sample quantitation limit of 0.00486 mg/kg. Pentachlorobenzene was also reported in only one largemouth bass whole body sample, at an estimated concentration below the quantitation limit of 0.07 mg/kg. The remaining five analytes (total mercury, hexachlorobenzene, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT) were more commonly reported.

Total mercury was reported in all of the largemouth bass samples and in all but one of the channel catfish samples. Hexachlorobenzene was reported (but usually at estimated concentrations below the sample quantitation limit) in all but one of the largemouth bass samples at a an estimated maximum concentration of 2.5 mg/kg. Hexachlorobenzene was reported in 17 of the catfish samples at a maximum estimated concentration of 1.8 mg/kg. The chlorinated pesticides were reported in most fish samples, although for 4,4'-DDT, most of the reported results were below the sample quantitation limits. In whole body largemouth bass, 4,4'-DDD and 4,4'-DDE averaged 8.3 mg/kg and 11.7 mg/kg respectively.

Reported concentrations of total mercury in largemouth bass fillets ranged from 0.9 mg/kg to 2.2 mg/kg (arithmetic average 1.6 mg/kg). Whole body concentrations in the largemouth bass were about half the levels reported for the fillets, ranging from 0.49 mg/kg to 1.2 mg/kg (average 0.79 mg/kg). The total mercury concentrations reported in channel catfish samples (fillet and whole body combined) ranged from less than the sample quantitation limit (0.2 mg/kg) to 0.67 mg/kg. Unlike the largemouth bass, total mercury concentrations in the catfish whole body samples were comparable to levels reported in the fillets. However, without both fillet and whole body concentrations from the same fish, an assessment of fillet vs. whole body concentrations in individual fish cannot be made.

Hexachlorobenzene was reported in 17 of the channel catfish samples; most of the reported concentrations were below the sample quantitation limits. The five catfish samples with the highest reported hexachlorobenzene levels (estimated concentration of 0.64 mg/kg to an estimated concentration of 1.8 mg/kg) were all whole body samples. There was a similar trend of higher hexachlorobenzene concentrations in the whole body samples as compared to the fillets for the largemouth bass. All of the reported hexachlorobenzene concentrations in the whole body largemouth bass samples were greater than the highest reported concentration in the fillets.

Table 19 summarizes information on the sizes, weights, condition factors (K), and ages of the fish used for tissue analyses. Channel catfish ranged in age from individuals in their first year of life (<I) to those in the fourth year (III+), whereas largemouth bass ranged from young-of-the-year to those in their sixth year (V+). In general, there was a tendency toward higher reported analyte concentrations in older, larger fish, but the trend was much more pronounced for hexachlorobenzene and the chlorinated pesticides than for total mercury. Indeed, the highest reported concentration for total mercury in largemouth bass whole body samples (1.2 mg/kg) was associated with the youngest, smallest individual processed (age <I, total length 214 mm). Fillets from the largest, oldest bass (two V+ individuals) had reported concentrations close to the overall mean for bass fillets (1.6 mg/kg), while the highest concentration reported in fillets (2.2 mg/kg) was associated with a three-year-old fish.

The condition factor (K) provides a basis for evaluating the general well-being of individual fish and populations. In addition to the specimens taken for tissue analysis, individuals of nontarget species caught in gillnets were weighed and measured. Where sufficient numbers were taken to provide a reasonably representative sample (and where relevant comparative data are available) it may be instructive to compare the K values of basin fish to those of other populations. Table 20 was prepared to facilitate such an evaluation. To the extent available, the reference values extracted from Carlander (1969, 1977) were taken for Alabama populations only. Where Alabama data were not available (channel catfish, bluegill), those from the nearest state were used. Note that it is very important to compare K factors only between individuals from the same size groupings. For most species considered, the relative condition of fish from the Olin basin compares favorably with the reference values. In five of the seven cases where means are available for comparison, the McIntosh fish have the higher value, although the differences are not pronounced, especially for an index of this type. At least with respect to this particular index, there does not appear to be any suggestion of stress in the basin species sampled.

# 4.0
# ASSESSMENT OF IMPACTS

Previous investigations (see Subsection 1.1) provided limited evidence of the presence and magnitude of chemicals of potential concern in OU-2. Methods employed in the initial phase of the RI/FS ecological assessment were intended primarily to define (from an ecological perspective) the chemicals of potential concern; to characterize the ecosystem; and to assess apparent or potential impacts attributable to the chemicals of concern. As noted in Subsection 3.1.5, the studies of macrophytic vegetation (entire OU-2) and benthic macroinvertebrates (basin only) incorporated consideration of evidence of stress or perturbation that might be related to the site constituents.

In the studies of higher (terrestrial/amphibious) vertebrates and fish, respectively, emphasis was placed on developing a more thorough understanding of the overall structure of the ecosystem and developing detailed information on bioaccumulation of chemicals of concern by key aquatic species. This approach was predicated largely on the consideration that effects of stress were likely to be more apparent (and perhaps more significant) among organisms that are essentially "captive" to the system, such as rooted plants or substrate-associated invertebrates. Because of the pronounced seasonal flooding (see Subsection 1.2.2), habitat for most of the higher vertebrates fluctuates substantially in availability — a factor which complicates efforts to define community structure. For related and other reasons, populations of nektonic aquatic forms, such as fishes and some amphibians and reptiles, are presumably quite dynamic. Even in a case where a population of a particular nektonic form (e.g., a fish or turtle) may be essentially resident to the basin, systematic or statistically meaningful measurements of the community structure are largely precluded by the widely-fluctuating physical conditions. The dynamics of the community structure were factors in selecting the species for tissue analysis (i.e., selecting the species that would be more resident to the basin).

## 4.1 MACROPHYTIC VEGETATION

The composition and structure of macrophyte communities in OU-2 were essentially as would be expected in similar areas along the lower Tombigbee River valley. Most indications of stress were fairly localized and were reasonably attributable to factors other than air, soil/sediment, or water contamination by the site constituents of concern. For example, there was evidence of physical disturbance of the soil and fire damage in the northern portion of OU-2, and the dissolved solids loadings (salinity) in the wastewater ditch seem to have restricted colonization of the stream bed by rooted plants.

There was some indication of die-back (upper portions) in a few cypress trees and limited mortality among oaks, most noticeably expressed in the northern portion of OU-2 (i.e., in the area where the least exposure to site-related chemicals would be expected). Other specific indications of toxic effects on individual plants (e.g., retarded overall growth, abnormal leaf development, abnormal growth form) were sought but such evidence was not observed.

The scarcity of submerged and emergent vascular plants in the shallow, marginal portions of the basin is perhaps noteworthy, although it remains unclear if this is a condition peculiar to this system. Moreover, a number of factors other than the presence of the chemicals of concern are much more likely to influence development of littoral vegetation in this system. The surficial layers of the sediment in the basin (including those around most of the margins) were observed to be quite soft, almost flocculent, in most areas, and this would discourage the establishment of rooted plants. Sections of the basin shoreline supporting emergent vegetation are mainly along the eastern and northeastern edges.

## 4.2 TERRESTRIAL/AMPHIBIOUS VERTEBRATES

For reasons discussed in Section 3.2.2, the amended Work Plan (May 25, 1991) did not address efforts to directly observe (or measure) relative abundance of populations or other characteristics of higher vertebrates that would provide evidence of adverse impacts due to exposures to chemicals. It can be said, however, that there were not any obvious indications (either direct or indirect) that amphibian, reptile, bird, or mammal populations of OU-2 differ significantly (if at all) from those of similar areas offsite. The findings of the vegetation studies reinforce this observation, since they indicate that terrestrial habitats in OU-2 are not structurally or functionally dissimilar to others in the vicinity. None of the species actually observed (directly or by "sign") were unexpected; nor did any appear conspicuously abundant, as might be indicative of a stress limiting the numbers of competitors.

## 4.3 BENTHIC MACROINVERTEBRATES

Results of benthic sampling suggested that the basin may not support as diverse a macroinvertebrate community as might generally be expected in similar systems. It remains unclear, however, to what extent the basin is atypical of comparable lower Tombigbee River floodplain systems. For example, there was a noticeable scarcity of representatives of the functional group referred to as "shredders," but this is not surprising considering the virtual absence of coarse particulate organic matter (CPOM). Extreme scarcity of CPOM may or may not be characteristic of lentic systems elsewhere along the lower Tombigbee floodplain.

The multivariate statistical evaluations (SIGTREE, COMPTREE) did not reveal clear relationships between the reported concentrations of mercury in the sediments and benthic macroinvertebrate community structure and distribution. Depth appeared to be the primary factor influencing the distribution of benthic invertebrates, with both densities and diversity tending to be greater in shallower stations.

Some observations indicate that mercury could possibly be influencing the occurrence and/or health of representatives of some benthic taxa. For example, certain chironomids (midge larvae) and oligochaetes (segmented worms) which are considered to be relatively intolerant of heavy metals tended to be absent or scarce in some locations with elevated mercury concentrations. Oligochaetes with aberrant chaetae were also observed. The published literature shows relationships between aberrant chaetae and heavy metal concentrations (e.g., Milbrink, 1983). However, there is not documented evidence to indicate whether chaetal aberrations affect the health of the individual oligochaetes.

There is substantial evidence that several other factors, both anthropogenic and "natural," are also influencing the composition and structure of benthic communities in the basin. Most notable among the latter is the annual flooding of the basin and its potential effects on the physical characteristics of the sediments and availability of allochthonous materials such as CPOM. Section 5.0 outlines future activities that are designed to provide additional data to improve the interpretations of the macroinvertebrate data.

## 4.4 FISH

Although the primary objective of fish sampling in the basin was to obtain tissues from representatives of two species for analyses, observations were made of the relative abundance and community structure during nonflood conditions. With due consideration of the selectivity of the sampling methods, it is nevertheless possible to say that the numbers and types of fishes captured/observed were consistent with general expectations. Gizzard shad and threadfin shad were scarce and absent, respectively, compared to observations made during a summer reconnaissance. The last serves to illustrate the dynamic character of nektonic populations in an open lentic system such as the basin. The two species in question (particularly the latter) are widely recognized as important prey for such carnivores as largemouth bass and it is likely that shad numbers had been severely depleted under the conditions of relative confinement while the basin was essentially isolated from the river.

Tissue analyses indicated that most specimens of channel catfish and largemouth bass had bioaccumulated measurable quantities of mercury, 4,4'-DDD, and 4,4-DDE. Hexachlorobenzene and 4,4'-DDT were detected in many samples, but generally at levels below the quantitation limits. Chlorobenzene and pentachlorobenzene were each detected (below quantitation limits) once among 20 largemouth bass samples and not at all among the channel catfish. Although there was a very general tendency toward higher reported mercury and DDT-metabolite concentrations in older, larger fish, the trend was not very pronounced. Indeed, the highest whole-body and fillet concentrations of mercury in largemouth bass (1.2 mg/kg and 2.2 mg/kg, respectively) were not associated with the oldest fish. The same was true of channel catfish, where the tissue concentrations of mercury were less variable and generally somewhat lower than those found in the bass. The higher concentrations of mercury and the organic constituents in largemouth bass than channel catfish was consistent with the well-known tendency for these substances to biomagnify through higher trophic levels, inasmuch as the bass is a top carnivore and the catfish tends to feed more on benthic invertebrates.

The toxicity assessment (to be provided in the baseline risk assessment) will include an evaluation of surface water and sediment concentrations and the potential toxicological effects on fish. However, the literature was reviewed for this EETM to assess the potential relationships between the tissue concentrations and health of the fish. It should be noted, that the published data on the relationships between tissue concentrations and toxicological effects of mercury on fish are based largely on brook trout. The information available suggests that adverse effects are associated with tissue concentrations (whole body) as low as 5 mg/kg in brook trout (Salvelinus fontinalis) (Eisler 1987, Armstrong 1979). Intraperitoneal injections of methylmercuric chloride at a dose equivalent to 12 mg/kg produced measurable effects on the kidneys of channel catfish (Armstrong 1979). The tissue concentrations of mercury detected in the sampled fish are thus below the published "lowest observed effects levels" (LOELs) for any fish. This information, coupled with the observation that "condition factors" (K) of several basin fish tend to equal or exceed those of other populations, supports a conclusion that limited, if any, adverse impacts to the fish *per se* are associated with the detected analytes.

A key issue, of course, is the potential hazard associated with ingestion of basin fish by higher vertebrates, including humans. Human ingestion is being addressed in detail as part of the baseline risk assessment. The exposure assessment technical memorandum that was submitted to EPA on June 2, 1992 provides a site conceptual exposure model showing the potential exposure pathways and release mechanisms to human receptors. Similarly, a site conceptual exposure model will be developed to illustrate the pathways whereby ecological receptors may be exposed to the site chemicals of concern. As suggested above, several receptors representative of higher trophic levels (e.g., piscivorous birds) will be selected for evaluation. This EETM provides much of the "biological characterization" component of the evaluation process, which will incorporate further (largely literature-based) information on fate and transport of site-related chemicals of concern to culminate in a more detailed exposure assessment. The ecological assessment will also incorporate a detailed toxicity assessment for each of the chemicals of concern, leading to the final component, risk characterization (e.g., calculation of hazard indices or analogous metrics) and its associated uncertainty analysis.

# 5.0
# FUTURE ACTIVITIES

Sections 3.0 and 4.0 of this EETM present much of the information needed to complete the "biological characterization" component of an ecological assessment of OU-2 at the Olin McIntosh site. Most indications of stress or adverse impact seem to be attributable to factors other than site constituents. However, interpretation of the significance of some of the observations was confounded by the physical complexity of the system (particularly the annual flooding). Further investigation, either through detailed review of existing data (e.g., aerial photographs) or limited field efforts, is planned to resolve or at least better define the issues. The questions relate primarily to observations made during the vegetative stress and benthic macroinvertebrate studies.

As noted in Subsections 3.2.1 and 4.1, there were indications of upper-level die-back in cypress and mortality among some oaks, particularly in the northern portion of OU-2. The Phase III SAP submitted to EPA on June 25, 1992 outlines plans for additional sampling of sediments and floodplain soils. These results will be used in further consideration of possible relationships between levels of site constituents of concern and the apparent stress to the two overstory trees.

The question of whether the scarcity of rooted macrophytes in shallow marginal portions of the basin is peculiar to this system should be resolved. If available, recent aerial photographs of comparable pond-like systems elsewhere along the lower Tombigbee River floodplain will be examined. Field inspection of such systems is also planned. It should be noted that resolution of the littoral vegetation issue also has some bearing on the question of the scarcity of coarse particulate organic matter (CPOM) in the basin.

The amended work plan (May 25, 1991) proposed comparison of the macroinvertebrate data to a control area. However, based on the site reconnaissance of OU-2 and the surrounding area, it was speculated that the physical aspects of the system would have significant control over the macroinvertebrate populations, and these same physical conditions were not observed in a nearby area. Rather than comparisons to a control sample, the revised SAP (October 1991) outlined the procedures that were used in the macroinvertebrate study, which was comparison among stations within the basin. The issue has been raised in this EETM of whether comparable environments along the lower Tombigbee River floodplain support "richer" benthic macroinvertebrate communities, particularly in the context of diversity. Therefore, investigation of the further reaches of the lower Tombigbee River floodplain will be conducted in an attempt to locate a relatively comparable control area. If found, the control area will be sampled for macroinvertebrates. Caution will be exercised in interpreting the results because the existence of an exactly comparable ("control") area is doubtful. Approximately three representative stations in the basin will be sampled again in conjunction with the offsite effort. The macroinvertebrate sampling will be conducted using the same methods as outlined in this document (Section 3.1.3) and the revised SAP (October 1991). The work will be done in conjunction with the Phase III sampling.

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Woodward-Clyde Consultants

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TABLES

# TABLE 1

## SUMMARY OF 1986 FISH SAMPLE RESULTS

| Species | Sample No. | Length (cm) | Weight (g) | CB[1,2] (mg/kg) | Lipid (%) | Hg[1,2] (mg/kg) |
|---|---|---|---|---|---|---|
| Largemouth Bass | 020 | 35.5 | 712.3 | 0.11 | 0.15 | 1.89 |
| Largemouth Bass | 010 | 30.2 | 374.3 | 0.05 | 0.08 | 1.47 |
| Largemouth Bass | 005 | 23.6 | 163.3 | 0.05 | 0.12 | 1.46 |
| Largemouth Bass | 016 | 16.0 | 49.8 | 0.21 | 0.20 | IS |
| Channel catfish | 009 | 37.0 | 334.4 | 0.16 | 0.16 | 0.66 |
| Channel catfish | 018 | 23.5 | 91.6 | 0.56 | 0.26 | 0.68 |
| Channel catfish | 008 | 17.1 | 31.7 | 0.09 | 0.15 | IS |
| Channel catfish | 014 | 14.6 | 18.6 | 0.24 | 40.67 | IS |
| Mullet | 002 | 35.7 | 631.6 | 2.23 | 3.30 | 0.12 |
| Mullet | 001 | 35.6 | 530.2 | 3.75 | 3.36 | 0.21 |
| Mullet | 004 | 36.5 | 576.3 | 2.04 | 2.41 | 0.14 |
| Mullet | 007 | 33.0 | 383.3 | 1.80 | 0.92 | 0.18 |
| Mullet | 012 | 29.5 | 258.8 | 4.19 | 2.32 | 0.19 |
| Smallmouth buffalo | 006 | 36.3 | 601.0 | 0.18 | 0.27 | 0.59 |
| Rockbass | 003 | 20.0 | 129.8 | 0.16 | 0.30 | 0.97 |
| Redear sunfish | 019 | 16.1 | 54.9 | 0.03 | 0.10 | IS |
| Redear sunfish | 017 | 15.8 | 55.1 | 0.05 | 0.21 | IS |
| Green sunfish | 023 | 14.1 | 47.3 | 0.12 | 0.17 | IS |
| Green sunfish | 011 | 16.5 | 56.6 | 0.13 | 0.45 | IS |
| Bluegill | 013 | 16.4 | 63.8 | 0.15 | 0.65 | IS |
| Bluegill | 021 | 15.5 | 55.7 | 0.04 | 0.09 | IS |
| Bluegill | 015 | 17.0 | 84.7 | 0.20 | 0.51 | 0.78 |
| Bluegill | 022 | 13.8 | 38.0 | 0.15 | 0.27 | IS |

NOTES:

CB = Sum of the chlorinated benzenes; dichlorobenzene (two isomers), trichlorobenzene (three isomers), tetrachlorobenzene (two isomers), pentachlorobenzene, hexachlorobenzene, and pentachloronitrobenzene.

IS = Insufficient sample for analysis.

1 = The fish were collected in September 1986 and stored frozen until they were processed in December 1988 to January 1989.

2 = Analyses were conducted on fish fillets.

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## TABLE 2

## SUMMARY OF PHASE I TCL RESULTS[1]
## OPERABLE UNIT 2 SEDIMENT GRAB SAMPLES

| Analyte | Number of Grab Samples Out of 21 Where Analyte Was Detected | Maximum Concentration Detected in Grab Sample (mg/kg) |
|---|---|---|
| TCL Volatile Organics | | |
| Chlorobenzene | 20 | 1.0 |
| TCL Semivolatile Organics | | |
| 1,2,4-Trichlorobenzene | 1 | 1.1 |
| 1,2-Dichlorobenzene | 1 | 0.24 |
| 1,3-Dichlorobenzene | 4 | 0.95 |
| 1,4-Dichlorobenzene | 5 | 0.63 |
| Hexachlorobenzene | 10 | 810 |
| TCL Pesticides/PCB | | |
| 4,4'-DDD | 19 | 1.8 |
| 4,4'-DDE | 20 | 1.4 |
| 4,4'-DDT | 18 | 4.0 |
| Aldrin | 1 | 0.028 |
| Alpha-BHC | 2 | 0.014 |
| Beta-BHC | 4 | 0.018 |
| Delta-BHC | 2 | 0.017 |
| Endosulfan I | 1 | 0.011 |
| Endosulfan II | 1 | 0.051 |
| Gamma-BHC | 1 | 0.029 |
| Heptachlor Epoxide | 1 | 0.017 |

NOTES:

[1] Samples collected in August 1991.

# TABLE 3

## SUMMARY OF PHASE I TAL RESULTS OPERABLE UNIT 2 SEDIMENT GRAB SAMPLES[1]

| Analyte | Number of Grab Samples Where Analyte Was Detected[2] | Maximum Concentration or Maximum Detection Limit (mg/kg) | ER-L[3] (mg/kg) | ER-M[3] (mg/kg) | Number of Samples Reported Above ER-L | Common Range[4] (mg/kg) |
|---|---|---|---|---|---|---|
| Antimony | 4[5] | 24.6 | 2.0 | 25 | 4[6] | 2 - 10 |
| Arsenic | 21 | 16.1 | 33 | 85 | 0 | 1 - 60 |
| Beryllium | 0 | 2.7U[7] | --[8] | --[8] | NA | 0.1 - 40 |
| Cadmium | 0 | 1.52U[7] | 5 | 9 | 0 | 0.01 - 0.7 |
| Chromium | 21 | 52.1 | 80 | 145 | 0 | 1 - 1,000 |
| Copper | 21 | 57.5 | 70 | 390 | 0 | 2 - 100 |
| Lead | 21 | 44.2 | 35 | 110 | 3 | 1 - 200 |
| Mercury | 109 | 290 | 0.15 | 1.3 | 109[9] | 0.1 - 0.8 |
| Nickel | 0 | 27.9U[7] | 30 | 50 | 0 | 5 - 500 |
| Selenium | 0 | 6.7U[7] | --[8] | --[8] | NA | 0 - 2 |
| Silver | 0[10] | 1.36U[7] | 1.0 | 2.2 | 0 | 0.01 - 5 |
| Thallium | 0[11] | 2.19U[7] | --[8] | --[8] | NA | No common range listed |
| Zinc | 21 | 227 | 120 | 270 | 11 | 10 to 300 |
| Cyanide | 5 | 1.5 | --[8] | --[8] | NA | No common range listed |

NOTES:

1 Samples collected in August 1991.

2 Total of 21 grab samples collected for all analytes except mercury. There were 112 grab samples for mercury.

3 Long, Edward R. and Morgan, Lee G., 1990. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52, Office of Oceanography and Marine Assessment. The Effects Range-Low (ER-L) and Effects Range-Median (ER-M) values were established as informal guidelines for evaluation of sediment data. The data used to develop these guidelines were derived from a wide variety of methods and approaches. These parameters are used for screening purposes as a general indicator of the

## TABLE 3 (Continued)

## SUMMARY OF PHASE I TAL RESULTS OPERABLE UNIT 2 SEDIMENT GRAB SAMPLES[1]

potential for biological effects from detected sediment concentrations. It should be noted that biological effects that may be related to these analytes are very site-specific and are dependent on factors other than bulk sediment concentrations.

[4] U. S. EPA, Office of Solid Waste and Emergency Response, Hazardous Waste Land Treatment, SW-874 (April, 1983), Page 273, Table 6-46.

[5] Thirteen samples and one duplicate sample that were reported as not detected were rejected during data validation due to insufficient matrix spike sample recovery.

[6] The detection limits for the samples reported as not detected ranged from 3.63 to 6.23 mg/kg.

[7] Analyte was not detected in any of the grab samples. The maximum detection limit is given.

[8] ER-L and ER-M values not listed for these analytes.

[9] Detection limits for the three samples reported as not detected ranged from 0.16 to 0.19 mg/kg.

[10] Twelve samples and two duplicate samples that were reported as not detected were rejected during data validation due to insufficient recovery from the interference check sample.

[11] Seventeen samples and one duplicate that were reported as not detected were rejected during data validation due to insufficient matrix spike sample recovery.

NA = Not applicable.

## TABLE 4

## SUMMARY OF PHASE I TAL SURFACE WATER RESULTS OPERABLE UNIT 2[1]

| Metal | Maximum Concentration Reported (μg/l) | Number of Samples Analyte Was Detected In[2] | Water Quality Criteria[3] (μg/l) | Number of Samples Reported Above Water Quality Criteria[2] |
|---|---|---|---|---|
| Arsenic | 12.2 | 2 | (Pentavalent) 48[4] | 0 |
| | | | (Trivalent) 190 | 0 |
| Cadmium | 2.2 | 2 | 1.1[5] | 2[6] |
| Chromium | 11.1 | 7 | (Hexavalent) 11 | 1 |
| | | | (Trivalent) 210[5] | 0 |
| Cyanide | 36.9 | 7 | 5.2 | 7[7] |
| Lead | 3.8 | 3 | 3.2[5] | 3 |
| Mercury | 2.8 | 12 | 0.012 | 12 |
| Nickel | 45.9 | 7 | 160[5] | 0 |
| Zinc | 444 | 10 | 110[5] | 5 |

NOTES:

1. Only total analyses summarzied; samples collected in August 1991.
2. Total out of 12 samples collected.
3. U. S. EPA, Quality Criteria for Water 1986 EPA 440/15-86-001; (and September 1987 update) freshwater chronic criteria .
4. Insufficient data to develop criteria. Value presented is lowest observed effects level (LOEL).
5. Based on a hardness of 100 mg/l as $CaCO_3$.
6. Detection limit was 2.0 μg/l.
7. Detection limit was 10.0 μg/l.

## TABLE 5

## VEGETATION AND LAND COVER TYPES OCCURRING WITHIN OPERABLE UNIT 2[1]

| Vegetation/Land Cover Type | Acres Within Unit | Percentage of Total |
|---|---|---|
| Mixed Upland Forest | 13.3 | 5.8 |
| Semi-Permanently Flooded Bottomland Forest | 23.7 | 10.3 |
| Temporarily Flooded Bottomland Forest | 79.1 | 34.5 |
| Shrub Dominated Zone | 12.6 | 5.5 |
| Herbaceous Dominated Zone | 18.8 | 8.2 |
| Open Water Ponds and Streams | 79.8 | 34.9 |
| Other (roads, etc.) | 1.8 | 0.8 |
| **TOTAL** | **229.1** | **100** |

NOTES:

1 Vegetation survey conducted in September 1991.

## TABLE 6

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2[1]

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Acer negundo | Box elder | O | | x | | x | |
| Acer rubrum | Red maple | O | x | | x | x | |
| Acer saccharinum | Silver maple | O | | x | | | |
| Ampelopsis arborea | Peppervine | V | x | x | x | x | x |
| Arundinaria tecta | Reed cane | S | | | x | | x |
| Asclepias incarnata | Swamp milkweed | H | | | x | | x |
| Baccharis glomerulifolia | Groundsel | S | | | | x | x |
| Betula nigra | River birch | O | | | x | x | x |
| Bidens mitis | Beggars tick | H | | x | | | |
| Bignonia capreolata | Cross vine | V | x | x | x | x | x |
| Boehmeria cylindrica | False nettle | H | | | x | x | |
| Brunnichia ovata | Ladies-eardrops | V | | | x | x | |
| Bulbostylis stenophylla | Bulbostylis | H | | | | x | |
| Callicarpa americana | American beautyberry | S | x | | x | | |
| Calystegia sepium | Hedge bindweed | V | | | x | x | x |
| Campsis radicans | Trumpet vine | V | x | | x | | |
| Campanula americana | Bellflower | H | | | x | x | |
| Cardiospermum halicacabrum | Balloon vine | H | | | | x | x |
| Carex glaucescens | Sedge | H | | x | | | |
| Carpinus caroliniana | Ironwood | O | x | | x | | |
| Carya aquatica | Water hickory | O | | | x | | |
| Carya cordiformis | Bitternut hickory | O | | | x | | |
| Carya glabra | Pignut hickory | O | | | x | | |
| Carya tomentosa | Mockernut hickory | O | x | | x | | |
| Cassia obtusifolia | Sicklepod | H | | | | x | x |

## TABLE 6 (Continued)

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Celtis laevigatus | Sugarberry | O | x | | x | x | |
| Cephalanthus occidentalis | Buttonbush | S | | x | x | x | x |
| Cerastium glomeratum | Mouse-ear chickweed | H | | | | | x |
| Chamaesyce hyssopifolia | Spurge | H | | x | | | |
| Chasmanthium ornithorhynchum | Spanglegrass | H | | | x | | |
| Commelina diffusa | Dayflower | H | | | x | | |
| Conoclinum coelestinum | Mistflower | H | | | | | x |
| Coreopsis tripteris | Tickseed | H | | | | | x |
| Cornus florida | Flowering dogwood | U | x | | | | |
| Crataegus sp. | Hawthorn | U | | | x | x | |
| Crotalaria pallida | Rattlebox | H | | | | | x |
| Cyperus albomarginatus | Sedge | H | | | x | | |
| Cyperus odoratus | Sedge | H | | x | x | | x |
| Cyperus sp. | Sedge | H | x | | | | |
| Cyperus sp. | Sedge | H | | | | | x |
| Daubentonia punicea | Bladderpod | H | | | | x | |
| Diodia virginiana | Buttonweed | H | | | x | x | |
| Diospyros virginiana | Persimmon | O | | | x | | |
| Echinochloa crus-galli | Barnyard grass | H | | | | | x |
| Eragrostis pectinacea | Lovegrass | H | | | | | x |
| Eupatorium capillifolium | Dog fennel | H | | | | | x |
| Fagus grandiflora | American beech | O | x | | | | |
| Forestiera acuminata | Swamp privet | U | | | x | x | |
| Fraxinus pennsylvatica | Green ash | O | | | x | | |
| Gelsemium sempervirens | Yellow jasmine | V | | | x | | |

## TABLE 6 (Continued)

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Gratiola pilosa | Hedge hyssop | H | | | x | x | |
| Hedera helix | Ivy | V | | | x | x | |
| Heliotropium angiospermum | Scorpion-tail | H | | | | x | x |
| Hibiscus moscheatos | Swamp mallow | S | | | x | x | |
| Hypericum hypericoides | St. Andrews cross | H | x | | | | |
| Ilex opaca | American holloy | U | x | | | | |
| Ilex verticillata | Winterberry | U | x | | x | x | |
| Ilex vomitoria | Yaupon | U | | | x | | |
| Illicium floridana | Star anise | H | | | x | | |
| Ipomoea lacunosa | Morning glory | H | | | x | x | |
| Jacquemontia tamnifolia | Jacquemontia | H | | | | | x |
| Justicia ovata | Water willow | H | | | | x | |
| Leersia lenticularis | Catchfly grass | H | | | | | x |
| Leersia oryzoides | Rice cutgrass | H | | | | | x |
| Leersia virginica | White grass | H | | | x | | |
| Leonotis nepataefolia | Lion's ear | H | | | | | x |
| Leptochloa filiformis | Sprangletop | H | x | x | x | x | x |
| Lindernia dubia | False pimpernel | H | | x | x | x | x |
| Liquidambar styraciflua | Sweetgum | O | x | | x | x | |
| Ludwigia alternifolia | Ludwigia | H | | | x | | |
| Ludwigia maritima | Rattlebox | H | | | | x | x |
| Ludwigia peruviana | Primrose willow | S | | x | | | |
| Ludwigia repens | Red ludwigia | H | | x | x | | |
| Lycopus rebellus | Water horehound | H | | | x | | |

## TABLE 6 (Continued)

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Lycopus virginicus | Water Horehound | H | | | x | | |
| Mecardonia acuminata | Mecardonia | H | | | x | x | |
| Mitchella repens | Partridgeberry | H | x | | | | |
| Myrica cerifera | Wax myrtle | S | x | | x | x | |
| Nyssa aquatica | Tupelo gum | O | | x | x | | |
| Nyssa biflora | Black gum | O | x | | x | | |
| Ostrya virginiana | Hop hornbeam | O | x | | x | x | |
| Panicum anceps | Panic grass | H | | | x | | |
| Panicum dichotomiflorum | Panic grass | H | | x | | | |
| Panicum rigidulum | Panic grass | H | | x | | | |
| Parthenocissus quinquefolia | Virginia creeper | V | x | | x | | |
| Pinus elliottii | Slash pine | O | x | | | | |
| Pinus taeda | Loblolly pine | O | x | | | | |
| Planera aquatica | Water elm | U | | | x | x | |
| Platanus occidentalis | Sycamore | O | | | x | | |
| Pluchea odorata | Camphor weed | H | | x | | | |
| Populus deltoides | Eastern cottonwood | O | | | x | x | |
| Prunus caroliniana | Carolina laurel cherry | U | | | x | | |
| Prunus serotina | Black cherry | O | x | | | | |
| Quercus alba | White oak | O | x | | | | |
| Quercus falcata | Southern red oak | O | x | | | | |
| Quercus falcata var. pagodaefolia | Cherrybark oak | O | | x | x | | |
| Quercus laurifolia | Laurel oak | O | x | | | | |
| Quercus lyrata | Overcup oak | O | x | x | x | | |

## TABLE 6 (Continued)

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Quercus michauxii | Swamp chestnut oak | O | | x | x | | |
| Quercus nigra | Water oak | O | x | x | | | |
| Quercus phellow | Willow oak | O | | | x | | |
| Quercus shumardii | Shumard oak | O | x | | | | |
| Rubus cuneifolius | Sand blackberry | S | | | x | | |
| Rhus copallina | Winged sumac | S | | | x | x | |
| Rhus glabra | Smooth sumac | S | x | | | | |
| Rumex sp. | Dock | H | | | | x | |
| Sagittaria calycina | Arrowhead | H | | x | | | |
| Sagittaria graminea | Slender arrowhead | H | | x | | | |
| Sagittaria latifolia | Broadleaf arrowhead | H | | x | | | |
| Salix nigra | Black willow | O | | | x | x | x |
| Sapium sebiferum | Chinese tallow-tree | O | | | x | | x |
| Saururus cernuus | Lizards tail | H | | | x | | |
| Sida spinosa | Prickly mallow | H | | | | x | x |
| Smilax bona-nox | Greenbrier | V | | | x | | |
| Smilax laurifolia | Bamboo vine | V | x | x | x | | |
| Smilax pumila | Jackson vine | V | x | | x | | |
| Spirodela polyrhiza | Duckmeat | H | | x | | | |
| Stachys tenuifolia | Stachys | H | | | | | x |
| Stellaria sp. | Chickweed | H | | | | | x |
| Symplocos tinctoria | Sweetleaf | U | x | | x | | |
| Taxodium distichum | Bald cypress | O | | x | x | x | |
| Toxicodendron radicans | Poison ivy | V | x | | x | | |
| Triadenum virginicum | Marsh St. Johns wort | H | | | | | x |

## TABLE 6 (Continued)

## VASCULAR PLANT SPECIES FOUND IN OPERABLE UNIT 2

| Scientific Name | Common Name | Strata | Occurrence in Community Type | | | | |
|---|---|---|---|---|---|---|---|
| | | | MUF | SPFB | TFB | SDB | HDB |
| Typha latifolia | Cattail | H | | | | x | x |
| Ulmus alata | Winged elm | U | x | | | | |
| Ulmus americana | American elm | O | x | | x | | |
| Ulmus rubra | Slippery elm | U | x | | | | |
| Vaccinium arborea | Sparkleberry | U | x | | x | | |
| Vaccinium stamineum | Gooseberry | S | x | | | | |
| Viburnum obovatum | Walter viburnum | U | x | | x | x | |
| Viburnum nudum | Possumhaw viburnum | U | | | x | | |
| Vitis aestivalis | Summer grape | V | | | x | | |
| Vitis rotundifolia | Muscadine grape | V | x | | x | | |
| Xanthium strumarium | Cocklebur | H | | | | x | x |

NOTES:

[1] = Vegetation survey conducted in September 1991.
MUF = Mixed Upland Forest
SPFB = Semi-Permanently Flooded Bottomland Forest
TFB = Temporarily Flooded Bottomland Forest
SDB = Shrub-Dominated bottomland
HDB = Herbaceous-Dominated Bottomland
O = Overstory
V = Vines
S = Shrub
H = Herbaceous
U = Understory

# TABLE 7

## VEGETATIVE CHARACTERISTICS OF MIXED UPLAND FOREST IN OPERABLE UNIT 2[1]

| Species | % Cover | Relative Cover % | Density/ Acre | Relative Density % | Basal Area $ft^2$/acre | Relative Basal Area | Frequency % | Relative Frequency % | Importance Value % |
|---|---|---|---|---|---|---|---|---|---|
| OVERSTORY | | | | | | | | | |
| Carpinus caroliniana | 7.50 | 19.47 | 100.00 | 40.00 | 19.84 | 57.17 | 50.00 | 11.11 | 36.10 |
| Oxydendron arborea | 2.50 | 6.90 | 100.00 | 40.00 | 4.78 | 13.78 | 50.00 | 11.11 | 21.65 |
| Quercus nigra | 2.50 | 6.50 | 50.00 | 20.00 | 10.08 | 29.05 | 50.00 | 11.11 | 20.06 |
| Quercus lyrata | 15.00 | 38.96 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| Fagus grandiflora | 5.00 | 12.99 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| Quercus falcata | 2.50 | 6.50 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| Pinus taeda | 2.50 | 6.50 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| Liquidambar styraciflua | 0.50 | 1.29 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| Quercus alba | 0.50 | 1.29 | 0.00 | 0.00 | 0.00 | 0.00 | 50.00 | 11.11 | 3.70 |
| TOTAL | 38.50 | 100.00 | 250.00 | 100.00 | 34.70 | 100.00 | 450.00 | 100.00 | 100.00 |
| UNDERSTORY | | | | | | | | | |
| Symplocos tinctoria | 7.50 | 48.36 | 100.00 | 15.39 | 5.74 | 54.56 | 50.00 | 20.00 | 29.98 |
| Vaccinium arboreum | 5.00 | 32.23 | 300.00 | 46.17 | 0.65 | 6.18 | 50.00 | 20.00 | 24.13 |
| Oxydendron arborea | 2.50 | 16.12 | 100.00 | 15.39 | 1.93 | 18.35 | 50.00 | 20.00 | 17.92 |
| Ilex verticillata | 0.50 | 3.22 | 100.00 | 15.39 | 1.59 | 15.11 | 50.00 | 20.00 | 16.83 |
| Platanus occidentalis | 0.01 | 0.07 | 100.00 | 15.39 | 1.59 | 15.11 | 50.00 | 20.00 | 11.14 |
| TOTAL | 15.51 | 100.00 | 650.00 | 100.00 | 10.52 | 100.00 | 250.00 | 100.00 | 100.00 |

NOTES:

[1] Vegetation survey conducted in September 1991.

## TABLE 8

## VEGETATIVE CHARACTERISTICS OF SEMI-PERMANENTLY FLOODED BOTTOMLAND FOREST IN OPERABLE UNIT 2[1]

| Species | % Cover | Relative Cover % | Density/ Acre | Relative Density % | Basal Area $ft^2$/acre | Relative Basal Area | Frequency % | Relative Frequency % | Importance Value % |
|---|---|---|---|---|---|---|---|---|---|
| OVERSTORY | | | | | | | | | |
| Taxodium distichum | 21.11 | 84.44 | 211.00 | 100.00 | 517.51 | 100.00 | 77.77 | 87.50 | 95.83 |
| Quercus lyrata | 3.89 | 15.56 | 0.00 | 0.00 | 0.00 | 0.00 | 11.11 | 12.50 | 4.17 |
| TOTAL | 25.00 | 100.00 | 211.00 | 100.00 | 517.51 | 100.00 | 88.88 | 100.00 | 100.00 |
| UNDERSTORY | | | | | | | | | |
| Planera aquatica | 0.56 | 38.62 | 33.33 | 75.00 | 0.43 | 64.18 | 11.11 | 33.33 | 57.50 |
| Taxodium distichum | 0.56 | 38.62 | 11.11 | 25.00 | 0.24 | 35.82 | 11.11 | 33.33 | 31.39 |
| Nyssa aquatica | 0.33 | 22.76 | 0.00 | 0.00 | 0.00 | 0.00 | 11.11 | 33.33 | 11.11 |
| TOTAL | 1.45 | 100.00 | 44.44 | 100.00 | 0.67 | 100.00 | 33.33 | 100.00 | 100.00 |

NOTES:

1 Vegetation survey conducted in September 1991.

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## TABLE 9

## VEGETATIVE CHARACTERISTICS OF TEMPORARILY FLOODED FOREST IN OPERABLE UNIT 2[1]

| Species | % Cover | Relative Cover % | Density/ Acre | Relative Density % | Basal Area $ft^2$/acre | Relative Basal Area | Frequency % | Relative Frequency % | Importance Value % |
|---|---|---|---|---|---|---|---|---|---|
| **OVERSTORY** | | | | | | | | | |
| Platanus occidentalis | 2.14 | 7.88 | 9.52 | 6.67 | 26.04 | 30.81 | 9.54 | 6.07 | 14.52 |
| Taxodium distichum | 3.09 | 11.37 | 19.04 | 13.34 | 15.18 | 17.96 | 19.09 | 12.14 | 14.48 |
| Quercus falcata var. pagodaefolia | 6.71 | 24.70 | 14.25 | 9.98 | 12.57 | 14.87 | 28.57 | 18.18 | 14.34 |
| Carya aquatica | 1.66 | 6.11 | 14.25 | 9.98 | 9.80 | 11.60 | 14.25 | 9.06 | 10.21 |
| Ostrya virginiana | 5.23 | 19.25 | 19.04 | 13.34 | 6.08 | 7.19 | 14.25 | 9.06 | 9.86 |
| Quercus nigra | 2.14 | 7.88 | 19.04 | 13.34 | 2.86 | 3.38 | 9.54 | 6.07 | 7.60 |
| Nyssa biflora | 0.48 | 1.76 | 14.25 | 9.98 | 0.60 | 0.73 | 9.54 | 6.07 | 5.59 |
| Liquidambar | 0.95 | 3.50 | 9.52 | 6.67 | 3.99 | 4.72 | 4.77 | 3.03 | 4.82 |
| Quercus lyrata | 0.71 | 2.61 | 4.76 | 3.34 | 3.86 | 4.57 | 9.54 | 6.07 | 4.66 |
| Viburnum obovatum | 1.19 | 4.38 | 9.52 | 6.67 | 0.91 | 1.08 | 4.77 | 3.03 | 3.59 |
| Sapium sebiferum | 0.14 | 0.52 | 4.76 | 3.34 | 1.94 | 2.30 | 4.77 | 3.03 | 2.89 |
| Celtis laevigata | 0.79 | 2.90 | 4.76 | 3.34 | 0.67 | 0.79 | 4.77 | 3.03 | 2.39 |
| Ulmus americana | 1.09 | 4.01 | 0.00 | 0.00 | 0.00 | 0.00 | 9.54 | 6.07 | 2.02 |
| Betula nigra | 0.48 | 1.76 | 0.00 | 0.00 | 0.00 | 0.00 | 4.77 | 3.03 | 1.01 |
| Planera aquatica | 0.23 | 0.85 | 0.00 | 0.00 | 0.00 | 0.00 | 4.77 | 3.03 | 1.01 |
| Acer saccharinum | 0.14 | 0.52 | 0.00 | 0.00 | 0.00 | 0.00 | 4.77 | 3.03 | 1.01 |
| TOTAL | 27.17 | 100.00 | 142.71 | 100.00 | 84.51 | 100.00 | 157.25 | 100.00 | 100.00 |
| **UNDERSTORY** | | | | | | | | | |
| Quercus nigra | 1.05 | 16.03 | 47.62 | 26.32 | 1.79 | 34.16 | 14.29 | 13.66 | 24.72 |

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## TABLE 9 (Continued)

## VEGETATIVE CHARACTERISTICS OF TEMPORARILY FLOODED FOREST IN OPERABLE UNIT 2

| Species | % Cover | Relative Cover % | Density/ Acre | Relative Density % | Basal Area $ft^2$/acre | Relative Basal Area | Frequency % | Relative Frequency % | Importance Value % |
|---|---|---|---|---|---|---|---|---|---|
| Carpinus caroliniana | 0.29 | 4.43 | 14.28 | 7.89 | 0.32 | 6.11 | 14.29 | 13.66 | 9.23 |
| Viburnum obovatum | 0.95 | 14.50 | 19.05 | 10.53 | 0.46 | 8.79 | 4.76 | 4.54 | 7.95 |
| Diospyros virginiana | 0.10 | 1.53 | 14.29 | 7.90 | 0.28 | 5.34 | 9.52 | 9.12 | 7.45 |
| Taxodium distichum | 0.95 | 14.50 | 4.76 | 2.63 | 0.74 | 14.12 | 4.76 | 4.54 | 7.10 |
| Ilex verticillata | 0.09 | 1.37 | 14.29 | 7.90 | 0.34 | 6.49 | 4.76 | 4.54 | 6.31 |
| Forestiera acuminata | 0.24 | 3.66 | 19.05 | 10.53 | 0.18 | 3.43 | 4.76 | 4.54 | 6.17 |
| Celtis laevigatus | 0.71 | 10.84 | 9.52 | 5.26 | 0.16 | 3.05 | 4.76 | 4.54 | 4.28 |
| Nyssa biflora | 0.10 | 1.53 | 4.76 | 2.63 | 0.26 | 4.96 | 4.76 | 4.54 | 4.04 |
| Myrica cerifera | 0.14 | 2.14 | 4.76 | 2.63 | 0.20 | 3.82 | 4.76 | 4.54 | 3.66 |
| Prunus caroliniana | 0.04 | 0.61 | 4.76 | 2.63 | 0.15 | 2.86 | 4.76 | 4.54 | 3.34 |
| Quercus lyrata | 0.71 | 10.84 | 4.76 | 2.63 | 0.11 | 2.10 | 4.76 | 4.54 | 3.09 |
| Oxydendron arboreum | 0.48 | 7.33 | 4.76 | 2.63 | 0.11 | 2.10 | 4.76 | 4.54 | 3.09 |
| Liquidambar styraciflua | 0.04 | 0.61 | 4.76 | 2.63 | 0.07 | 1.34 | 4.76 | 4.54 | 2.84 |
| Vaccinium arboreum | 0.04 | 0.61 | 4.76 | 2.63 | 0.04 | 0.76 | 4.76 | 4.54 | 2.64 |
| Acer rubrum | 0.14 | 2.14 | 4.76 | 2.63 | 0.03 | 0.57 | 4.76 | 4.54 | 2.58 |
| Ulmus americana | 0.48 | 7.33 | 0.00 | 0.00 | 0.00 | 0.00 | 4.76 | 4.54 | 1.51 |
| TOTAL | 6.55 | 100.00 | 180.94 | 100.00 | 5.24 | 100.00 | 107.74 | 100.00 | 100.00 |

NOTES:

1 Vegetation survey conducted in September 1991.

## TABLE 10

## VEGETATIVE CHARACTERISTICS OF SHRUB-DOMINATED BOTTOMLAND IN OPERABLE UNIT 2[1]

| Species | % Cover | Relative Cover % | Density/ Acre | Relative Density % | Basal Area $ft^2$/acre | Relative Basal Area | Frequency % | Relative Frequency % | Importance Value % |
|---|---|---|---|---|---|---|---|---|---|
| OVERSTORY | | | | | | | | | |
| Ostrya virginiana | 4.50 | 35.16 | 20.00 | 50.00 | 6.95 | 74.89 | 10.00 | 12.50 | 45.80 |
| Celtis laevigata | 1.50 | 11.72 | 10.00 | 25.00 | 0.91 | 9.81 | 20.00 | 25.00 | 19.92 |
| Planera aquatica | 0.50 | 3.91 | 10.00 | 25.00 | 1.42 | 15.30 | 10.00 | 12.50 | 17.60 |
| Carpinus caroliniana | 3.00 | 23.44 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | 12.50 | 4.17 |
| Taxodium distichum | 2.00 | 15.63 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | 12.50 | 4.17 |
| Carya aquatica | 1.00 | 7.80 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | 12.50 | 4.17 |
| Betula nigra | 0.30 | 2.34 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | 12.50 | 4.17 |
| TOTAL | 12.80 | 100.00 | 40.00 | 100.00 | 9.28 | 100.00 | 80.00 | 100.00 | 100.00 |
| UNDERSTORY | | | | | | | | | |
| Forestiera acuminata | 13.20 | 42.98 | 380.00 | 58.46 | 4.36 | 35.77 | 30.00 | 27.27 | 40.50 |
| Planera aquatica | 11.50 | 37.43 | 200.00 | 30.77 | 5.42 | 44.46 | 40.00 | 36.37 | 37.20 |
| Ilex verticillata | 3.50 | 11.39 | 20.00 | 3.08 | 1.58 | 12.96 | 10.00 | 9.09 | 8.38 |
| Viburnum obovatum | 2.50 | 8.14 | 30.00 | 4.61 | 0.68 | 5.58 | 10.00 | 9.09 | 6.43 |
| Carya glabra | 0.01 | 0.03 | 10.00 | 1.54 | 0.08 | 0.66 | 10.00 | 9.09 | 3.76 |
| Carya aquatica | 0.01 | 0.03 | 10.00 | 1.54 | 0.07 | 0.57 | 10.00 | 9.09 | 3.73 |
| TOTAL | 30.72 | 100.00 | 650.00 | 100.00 | 12.19 | 100.00 | 110.00 | 100.00 | 100.00 |

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NOTES:

1 Vegetation survey conducted in September 1991.

## TABLE 11



## FEDERALLY LISTED ENDANGERED AND THREATENED PLANTS WHOSE RANGES INCLUDE THE MCINTOSH AREA AND WHICH HAVE HABITATS SIMILAR TO THOSE IN OPERABLE UNIT 2

| Scientific Name | Common Name | Status | Habitats | Potential for Occurrence |
|---|---|---|---|---|
| Apios priceana | Price's potato-bean | T | Bottomland thickets | Low - edge of range |
| Clematis socialis | Alabama leather flower | E | | |
| Lindera melissifolia | Pondberry | E | Sandy sinks, pond margins | Moderate, occurs in region |
| Marshallia mohrii | Mohr's barbaras-buttons | T | Bogs, wet pine woods | Low - lack of suitable habitat |
| Ptilimnium nodosum | Harperella | E | Sandbars, stream margins | Low - edge of range |
| Sagittaria secundifolia | Kral's water-plantain | T | | |
| Sarracenia rubra var. alabamensis | Alabama canebrake pitcher-plant | E | Shrub bogs, wet savannahs | Low - lack of bog habitat |
| Trillium reliquum | Relict trillium | E | | |

NOTES:

T = Threatened
E = Endangered

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# TABLE 12

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## SEDIMENT SAMPLE ANALYSES AND WATER QUALITY PARAMETERS AT MACROINVERTEBRATE SAMPLE LOCATION[1]

| | Sediment Analyses | | | Water Quality Parameters | | | | |
|---|---|---|---|---|---|---|---|---|
| Site | Mercury (mg/kg) | Hexachlorobenzene (mg/kg) | TOC (mg/kg) | Water Depth (ft-in.) | Water Temp (°C) | D. O.[2] (mg/l) | pH | Specific Conductance µmhos/cm) |
| B4 | 21.60<br>62.90 (dup.) | 1.2 | 12,100 | 1'8" | 15.3 | 7.84 | 7.5 | 198 |
| B6 | 57.80 | ND[3] | 21,100 | 7'6" | 14.6 | 5.72 | 7.5 | 186 |
| B8 | 10.20 | ND | 21,800 | 10'4" | 14.4 | 6.37 | 6.8 | 185 |
| B10 | 0.29 | ND | 19,400<br>19,100 (dup.) | 0'8" | 17.5 | 6.59 | 7.3 | 186 |
| BD[illegible] | 4.80 | 2.9 | 16,400 | 0'1.5" | NA[4] | NA[4] | NA[4] | NA[4] |
| BD33 | 5.80 | ND | 28,600<br>23,900 (dup.) | 0'3" | 17.7 | 9.06 | 7.5 | 42 |
| D4 | 18.10 | 11.4 | 4,190 | 2'1" | 15.1 | 7.22 | 7.5 | 200 |
| D6 | 22.40 | ND | 33,700<br>25,600 (dup.) | 18'7" | 14.1 | 6.02 | 7.3 | 186 |
| D8 | 18.40 | ND | 23,400 | 25'4" | 13.7 | 6.85 | 7.0 | 186 |
| D10 | 30.70 | ND | 32,700 | 14'6" | 14.8 | 6.25 | 7.2 | 186 |
| E2 | 17.40 | 265.00 | 2,670 | 0'6" | 18.2 | 8.96 | 7.9 | 201 |
| F4 | 12.50 | 66.2 | 2,910 | 3'1" | 14.4 | 7.04 | 7.4 | 199 |
| F6 | 79.00 | 1.4 | 19,400 | 7'5" | 14.7 | 6.46 | 7.5 | 185 |
| F8 | 4.40 | ND | 25,900 | 18'0" | 14.2 | 6.95 | 7.1 | 187 |
| F10 | 25.40<br>28.40 (dup.) | ND | 33,500 | 6'5" | 15.5 | 7.18 | 7.3 | 185 |
| G2 | 26.50 | 6.0 | 10,200 | 2'0" | 16.9 | 8.43 | 7.8 | 800 |
| H4 | 63.10 | 0.5 | 17,800<br>17,700 (dup.) | 3'6" | 13.2 | 7.59 | 7.4 | 200 |
| H6 | 200.00 | ND | 27,700 | 5'0" | 15.0 | 7.34 | 7.4 | 185 |
| H8 | 34.00 | ND | 34,200 | 7'0" | 14.1 | 7.73 | 7.4 | 186 |
| H10 | 290.00 | 1.8 | 120,000 | 2'8" | 15.8 | 8.02 | 7.5 | 186 |
| J4 | 14.80 | ND | 12,400 | 2'7" | 13.9 | 7.09 | 6.8 | 200 |
| J6 | 135.00 | ND | 16,200 | 4'0" | 16.0 | 8.15 | 7.5 | 186 |

NOTES

1 Samples collected November 4-8, 1991
2 D. O. = Dissolved oxygen.
3 ND = Not detected.
4 NA = Not available; water too shallow to measure parameters.

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## TABLE 13

## RESULTS FROM THE SEDIMENT PARTICLE SIZE ANALYSIS AT MACROINVERTEBRATE SAMPLE LOCATIONS[1]

| | | Percent Silt/Clay | Percent Sand | Percent Granules |
|---|---|---|---|---|
| B4: | R1 | 100 | 0 | 0 |
| | R2 | 97 | 3 | 0 |
| B6: | R1 | 100 | 0 | 0 |
| | R2 | 97 | 3 | 0 |
| B8: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| B10: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| BD01: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| BD03: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| D4: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| D6: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| D8: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| D10: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| E2: | R1 | 6 | 86 | 8[2] |
| | R2 | 15 | 85 | 0 |
| F4: | R1 | 20 | 80 | 0 |
| | R2 | 15 | 85 | 0 |
| F6: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| F8: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| F10: | R1 | 100 | 0 | 0 |
| | R2 | 84 | 16 | 0 |
| G2: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| H4: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |

**TABLE 13 (Continued)** 3 8 1032

## RESULTS FROM THE SEDIMENT PARTICLE SIZE ANALYSIS AT MACROINVERTEBRATE SAMPLE LOCATIONS

| | | Percent Silt/Clay | Percent Sand | Percent Granules |
|---|---|---|---|---|
| H6: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| H8: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| I10 | R1 | 2 | 31 | 68[3] |
| | R2 | 4 | 46 | 50 |
| J4: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |
| J6: | R1 | 100 | 0 | 0 |
| | R2 | 100 | 0 | 0 |

1

NOTES:

R1 = Replicate sample number 1.
R2 = Replicate sample number 2.
[1] = Samples collected November 4-8, 1991.
[2] = Granules and empty broken shells.
[3] = Mostly detritus.

# TABLE 14

## BENTHIC MACROINVERTEBRATE TAXA FROM OPERABLE UNIT 2[1]

Platyhelminthes
 Turbellaria
  Tricladida
   Planariidae

Nematoda

Annelida
 Hirudinea
 Oligochaeta
  Tubificida
   Tubificidae
    Aulodrilus pigueti
    Branchiura sowerbyi
    Ilyodrilus templetoni
    Limnodrilus cervix/claparedianus
    Limnodrilus hoffmeisteri
    Limnodrilus maumeensis
    Limnodrilus udekemianus
    Hairs and pectinates A
    Hairs and pectinates
    Tubificidae sp. A
    Tubificidae sp. B
    Tubificidae sp. C
   Naididae
    Bratislavia unidentata
    Dero digitata
    Dero (A.) flabelliger
    Dero nivea
    Dero trifida
    Nais communis/variabilis
    Nais pardalis
    Pristinella jenkinae
    Pristina proboscidea
    Pristina synclites
    Stephensoniana trivandrana
    Naididae sp. 1
   Sparganophilidae

Arthropoda
 Hydrachnoidea
  Hydracarina
   Arrenuridae
    Arrenurus

**TABLE 14 (Continued)**

**BENTHIC MACROINVERTEBRATE TAXA FROM OPERABLE UNIT 2**

Hygrobatidae
Hygrobates
Krenkowskiidae
Krendowskia
Limnesiidae
Centrolimnesia
Mideopsidae
Mideopsis
Pionidae
Forelia
Sperchondiae
Sperchon
Unionicolidae
Koenikea
Koenikea vidua

Crustacea
Decapoda (immature)

Isopoda
Asellidae
Caecidotea

Ostracoda

Insecta
Megaloptera
Sialidae
Sialis

Hemiptera
Corixidae
Trichocorixa

Coleoptera
Dytiscidae
Hydacticus
Elmidae
Stenelmis
Hydrophilidae
Berosus
Tropisternus

TABLE 14 (Continued)

BENTHIC MACROINVERTEBRATE TAXA FROM
OPERABLE UNIT 2

Odonata
Gomphidae
Gomphus
Libellulidae
Libellula
Perithemis
Unidentified #1

Ephemeroptera
Caenidae
Caenis
Siphlonuridae
Siphlonurus

Trichoptera
Hydroptilidae
Orthotrichia
Leptoceridae
Oecetis

Diptera
Ceratopogonidae
Chaoboridae
Chaoborus
Tabanidae
Chrysops
Chironomidae
Clinotanypus
Coelotanypus
Procladius
Tanypus
Nanocladius
Chironomus
Chironomus sp. A
Cladotanytarsus
Cryptochironomus
Dicrotendipes
Microchironomus
Microtendipes
Paratanytarsus
Polypedilum
P. pedestre
Tanytarsus

## TABLE 14 (Continued)

## BENTHIC MACROINVERTEBRATE TAXA FROM OPERABLE UNIT 2

Mollusca
 Gastropoda
  Basommatophora (Lymnophila)
   Ancylidae
    *Ferrissia*
   Physidae
    *Physella*
   Planorbidae
    (probably *Menetus dilatatus*)
  Mesogastropoda
   Hydrobiidae
    *Cincinnatia cincinnatiensis*

 Bivalvia
  Heterodonta
   Corbiculidae
    *Corbicula*
   Sphaeriidae
    *Musculium*
    *Pisidium*
    *Sphaerium*
  Schizodonta
   Unionidae
    *Quadrula* probably *quadrula*
    *Toxolasma lividus*

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NOTES:

[1] Macroinvertebrate samples collected November 4-8, 1991.

# TABLE 15

## SUMMARY OF MACROINVERTEBRATE RESULTS[1]

| Benthic Invertebrate Sample Location | B4 | | | B6 | | | B8 | | | B10 | | | BD01 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planariidae | | | | | | | | | | 4 | 1 | 6 | | | |
| Nematoda | 2 | 1 | 1 | | | | 1 | | | 118 | 114 | 99 | 33 | | 15 |
| Hirudinea | | | | | | | | | | | | 1 | | | |
| A. pigueti | 14 | 25 | | 1 | | | | | | 77 | 28 | 20 | 136 | 62 | 365 |
| B. sowerbyi | 2 | | 4 | | | | | | | 7 | 4 | 1 | 2 | 1 | 1 |
| I. templetoni | | | | | | | | | | | | | | | |
| L. cervix/claparedianus | 4 | 10 | 6 | | 3 | 4 | 1 | | | | | | | | |
| L. hoffmeisteri | | | | | | | | | | | | | | | |
| L. maumeensis | 2 | 10 | | 3 | 1 | 2 | | | | | | | | | |
| L. udekemianus | | | | | | | | | | | 16 | 2 | | | |
| Limnodrilus sp. | | | | | 1 | | | | | 14 | | | | | |
| Bifids | 76 | 115 | 87 | 28 | 30 | 40 | 8 | 5 | 7 | 56 | 32 | 8 | 176 | 48 | 99 |
| H & P A | | 26 | | 5 | 3 | 8 | | | | | | | | | |
| H & P | | | | | 2 | 2 | | | | | 4 | | | | |
| Sp. A | | | | | | | | | | | | | | | |
| Sp. B | | | | | | | | | | | | | | | |
| Sp. C | | | | | | | | | | | | | | | |
| B. unidentata | | | | | | | | | | 7 | 4 | 6 | | | |
| D. digitata | 8 | 35 | 30 | | 2 | 2 | | 3 | 3 | 56 | | 6 | 8 | 15 | 9 |
| D. (A.) flabelliger | | | | | | | | | | | 4 | | | | 18 |
| D. nivea | | | | | | | | | | | | | | | 9 |
| D. trifida | | | | | | | | | | | | | | | |
| N. communis/variabilis | | | | | | | | | | 21 | 4 | 10 | | | |
| N. pardalis | | | 3 | | | | | | | 98 | 28 | 30 | | | |
| Pristinella | | | | | | | | | | 21 | | 6 | | | |
| P. jenkinae | | | | | | | | | | 15 | 24 | | 8 | | |
| Pristina | | | | | | | | | | | 4 | 4 | | | |
| P. proboscidea | | | | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | G2 | | | H4 | | | H6 | | | H8 | | | H10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Replicate** | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** | **A** | **B** | **C** |
| Planariidae | | 10 | 5 | 1 | | 1 | | 1 | | | | | | | |
| Nematoda | | | | | | | | | | | 1 | 2 | 1 | | 1 |
| Hirudinea | | | | | | | | | | | | | | | |
| A. pigueti | 1 | 4 | 6 | 6 | | | | 15 | | | | | 24 | 2 | 4 |
| B. sowerbyi | | | | 6 | 1 | | | 4 | | | | | 12 | 2 | 2 |
| I. templetoni | | | | 3 | | | | | | | | | | | 1 |
| L. cervix/claparedianus | | 5 | 3 | | 9 | 3 | | 12 | 4 | 3 | 2 | 12 | 3 | 1 | |
| L. hoffmeisteri | | | | | | | | | | | | | 3 | | |
| L. maumeensis | 7 | 12 | 6 | 15 | 3 | 18 | 8 | 3 | 2 | 3 | | | | | 1 |
| L. udekemianus | | | 3 | | | a | | | | | | | | | 2 |
| Limnodrilus sp. | | | | | | | | | | | | | | | |
| Bifids | 97 | 116 | 117 | 66 | 78 | 72 | 108 | 78 | 46 | 58 | 26 | 87 | 18 | 7 | 6 |
| H & P A | 18 | 4 | | 3 | 15 | 3 | 32 | 13 | 43 | 24 | 23 | 45 | 6 | 2 | 2 |
| H & P | | 28 | | 28 | 15 | 19 | | 18 | | 9 | | 18 | | | 3 |
| Sp. A | | | | | | | | | | | | | | | |
| Sp. B | | | | | | | | | | | | | | | |
| Sp. C | | | | | | | | | | | | | | | |
| B. unidentata | | | | | | | | | | | | | | | |
| D. digitata | 6 | 8 | 3 | | 6 | 12 | | | | 3 | 1 | | 39 | 8 | 20 |
| D. (A.) flabelliger | | | | | | | | | | | | | | | |
| D. nivea | | | | | | | | | | | | | | | 1 |
| D. trifida | | | | | | | | | | | | | | | |
| N. communis/variabilis | | | | | | | | | | | | | | | |
| N. pardalis | | | | | | | | | | | | | | | |
| Pristinella | | 4 | | | | | | | | | | | | | |
| P. jenkinae | | | | | | | | | | | | | | | |
| Pristina | | | | | | | | | | | | | | | |
| P. proboscidea | | | | | | | | | | 3 | | | | | |

# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | B4 | | | B6 | | | B8 | | | B10 | | | BD01 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| P. synclites | | | | | | | | | | | | 4 | | | |
| S. trivandrana | | 10 | | | 1 | | | | | | | | | 6 | 9 |
| Naididae UID #1 | | | | | | | | | | | | | | | |
| Sparaganophilidae | | | | | | | | | | 1 | | 2 | | | |
| Hygrobates | | | | | | | | | | | 1 | 2 | 1 | | |
| Koenikea | | | | | | | | | | | | | | | |
| Koenikea vidua | | | | | | | | | | 3 | | 4 | | | |
| Mideopsis | | | | | | | | | | | | | | | |
| Sperchon | | | | | | | | | | | | | | | |
| Arrenurus | | | | | | | | | | | | | | | |
| Forelia | | | | | | | | | | | | | | | |
| Centrolimnesia | | | | | | | | | | | | | | | |
| Krendowskia | | | | | | | | | | | | | | | |
| Caecidotea | | | | | | | | | | | 5 | | | | |
| Decapoda | | | | | | | | | | | | | | | 1 |
| Ostracoda | 15 | 16 | 8 | 11 | 22 | 18 | 10 | 14 | 47 | 473 | 193 | 289 | 3459 | 1242 | 3939 |
| Sialis | | | | | | | | | | | | | 1 | | |
| Trichocorixa | | | | | | | | | | | | | 4 | | 1 |
| Berosus | | | | | | | | | | | | | 16 | 2 | 14 |
| Hydrophilidae | | | | | | | | | | | | 4 | | | |
| Hydacticus | | | | | | | | | | | | | | | |
| Tropisternus | | | | | | | | | | | | | | | |
| Stenelmis | | | | | | | | | | | | | | | |
| Gomphus | | | | | | | | | | | | 2 | | | |
| Libellula | | | | | | | | | | | | | 2 | | 1 |
| Perithemis | | | | | | | | | | | | | | | |
| Odonata UID #1 | | | | | | | | | | 2 | 2 | | | | |
| Caenis | | | | | | | | | | 1 | 4 | 13 | 1 | | |

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TABLE 15 (Continued)

SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | B4 | | | B6 | | | B8 | | | B10 | | | BD01 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Siphlonurus | | | | | | | | | | 1 | | | | | |
| Hydroptilidae | | | | | | | | | | | | 4 | | | |
| Orthotrichia | | | | | | | | | | 6 | 11 | 45 | | | |
| Oecetis | | | | | | | | | | 6 | 1 | | | | |
| Ceratopogonidae | 19 | 5 | 3 | 5 | 4 | 4 | 1 | 5 | | 9 | 25 | 20 | 225 | 82 | 95 |
| Chaoborus | 2 | 14 | 3 | 62 | 44 | 64 | 115 | 297 | 240 | 1 | | | 2 | 1 | 1 |
| Chrysops | | | | | | | | | | | | | 1 | | |
| Chironomid pupae | 1 | | 1 | | | | | | | 6 | 4 | 5 | 2 | 5 | 1 |
| Clinotanypus | | | | | | | | | | 14 | 12 | 126 | 66 | 3 | 18 |
| Coelotanypus | 2 | 6 | 2 | | | 1 | | | | | 36 | 42 | | | |
| Procladius | 8 | 13 | 10 | | 1 | | | | 2 | | 12 | 21 | 24 | 3 | 24 |
| Tanypus | 2 | 6 | 2 | | 4 | 1 | 1 | 2 | | | | | 130 | 78 | 211 |
| Nanocladius | | | | | | | | | | 14 | 12 | 42 | | | |
| Chironomus | | | | | | | | | | 14 | | | | | |
| Chironomus sp. A | | | | | | | | | | | | | | | |
| Cladotanytarsus | 2 | | | | | | | | | 224 | 180 | 147 | 104 | 24 | 36 |
| Cryptochironomus | 24 | 36 | 17 | 3 | 2 | 3 | | 1 | | 70 | | 42 | | | |
| Dicrotendipes | | | | | | | | | | 295 | 408 | 693 | | | 6 |
| Microchironomus | 24 | 20 | 12 | 5 | 2 | 4 | | | | | | | 8 | 3 | |
| Microtendipes | | | | | | | | | | | | | | | |
| Paratanytarsus | | | | | | | | | | | | | | | |
| Polypedilum | | 4 | | | | | | | | 42 | 12 | 84 | | | |
| P. pedestre | | | | | | | | | | | | | | | |
| Tanytarsus | 4 | 1 | | | | | | | | | | | | | |
| Tanytarsini | | | | | | | | | | | | | | | |
| UID | | | | | | | | | | 14 | | | | | |
| Ferrissia | | | | | | | | | | | | 4 | | | |
| C. cincinnatiensis | | | | | | | | | | | | | | | |

## TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | BD03 | | | D4 | | | D6 | | | D8 | | | D10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planariidae | | | | | | | | | | | | | | | |
| Nematoda | 13 | 18 | 18 | 2 | 1 | 1 | 1 | 1 | 5 | 1 | 1 | | 16 | 10 | 10 |
| Hirudinea | | | | | | | | | | | | | | | |
| A. pigueti | 47 | 60 | 60 | 20 | 26 | 8 | | | | | | | | | |
| B. sowerbyi | 2 | 16 | 3 | 2 | | | | | | | | | | | |
| I. templetoni | | | | | | | | | 1 | | | | | | 1 |
| L. cervix/claparedianus | | | | 2 | 6 | | 3 | | 1 | | | 1 | | | |
| L. hoffmeisteri | | | | | | | | | | | | | | | |
| L. maumeensis | | | | 2 | 4 | 3 | | | | | | | | | |
| L. udekemianus | | | | | | | | | | | | | | | |
| Limnodrilus sp. | | | | | | | | | | | | | | | |
| Bifids | 50 | 54 | 75 | 30 | 60 | 36 | 13 | 13 | 8 | 15 | 18 | 16 | 10 | 13 | 14 |
| H & P A | 2 | 6 | 6 | | | | | | | 3 | 9 | | 7 | 2 | |
| H & P | | 6 | | | | 2 | 1 | | 1 | 1 | | | 1 | 10 | 27 |
| Sp. A | | | | | | | | | | | | | | | |
| Sp. B | | | | | | | | | | | | | | | |
| Sp. C | | | | | | | | | | | | | | | |
| B. unidentata | | | | | | | | | | | | | | | |
| D. digitata | 2 | | 6 | 8 | 2 | 3 | 1 | 1 | 2 | 1 | 1 | | 1 | 2 | 2 |
| D. (A.) flabelliger | | | | | | | | | | | | | | | |
| D. nivea | | | 3 | | | 1 | | | | | | | 1 | | |
| D. trifida | | | | 2 | | | | | | | | | | | |
| N. communis/variabilis | | | | 6 | | | | | | | | | | | |
| N. pardalis | | | | 2 | | 2 | | | | | | | 1 | | |
| Pristinella | | | | | | | | | | | | | | | |
| P. jenkinae | | | | | | | | | | | | | | | |
| Pristina | | | | | | | | | | | | | | | |
| P. proboscidea | | | | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | J4 | | | J6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | | | | | | | | | |
| Planariidae | | | | | | | | | | | | | | | |
| Nematoda | | | | 1 | 1 | | | | | | | | | | |
| Hirudinea | | | | | | | | | | | | | | | |
| A. pigueti | 2 | 6 | 6 | 12 | | 8 | | | | | | | | | |
| B. sowerbyi | | 9 | | 12 | 2 | | | | | | | | | | |
| I. templetoni | | | 3 | | | 8 | | | | | | | | | |
| L. cervix/claparedianus | | | | 12 | | 8 | | | | | | | | | |
| L. hoffmeisteri | | | | | | | | | | | | | | | |
| L. maumeensis | 2 | | | 12 | | 4 | | | | | | | | | |
| L. udekemianus | | | | | | | | | | | | | | | |
| Limnodrilus sp. | | | | | | | | | | | | | | | |
| Bifids | 68 | 93 | 107 | 163 | 64 | 97 | | | | | | | | | |
| H & P A | 4 | 27 | 6 | 19 | 8 | 4 | | | | | | | | | |
| H & P | | | 3 | 6 | 4 | | | | | | | | | | |
| Sp. A | | | | | 2 | | | | | | | | | | |
| Sp. B | | | | | | | | | | | | | | | |
| Sp. C | | | | | | | | | | | | | | | |
| B. unidentata | | | | | | | | | | | | | | | |
| D. digitata | 9 | 15 | 6 | 6 | 2 | 4 | | | | | | | | | |
| D. (A.) flabelliger | | | | | | | | | | | | | | | |
| D. nivea | | | | | | | | | | | | | | | |
| D. trifida | | | | | | | | | | | | | | | |
| N. communis/variabilis | | | | | | | | | | | | | | | |
| N. pardalis | | | | | | | | | | | | | | | |
| Pristinella | | | | | | | | | | | | | | | |
| P. jenkinae | | | | | | | | | | | | | | | |
| Pristina | | | | | | | | | | | | | | | |
| P. proboscidea | | | | | | | | | | | | | | | |

# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | E2 | | | F4 | | | F6 | | | F8 | | | F10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planariidae | | 13 | 2 | | | | | | | | | | | | |
| Nematoda | 121 | 652 | 275 | 4 | 1 | | 2 | | 1 | 13 | | 2 | 4 | | 2 |
| Hirudinea | | | | | | | | | | | | | | | |
| A. pigueti | 30 | 48 | 30 | 17 | 15 | 25 | | 3 | | | | | | | 4 |
| B. sowerbyi | 20 | 25 | 43 | | | | | | | | | | | | |
| I. templetoni | | | | | | | 12 | | | | | | | | |
| L. cervix/claparedianus | 45 | 156 | 60 | 2 | | 18 | | | | 1 | | | 2 | 8 | 2 |
| L. hoffmeisteri | | 24 | | | | | | | | | | | | | |
| L. maumeensis | 10 | | 6 | | | 4 | | | | | | | 2 | | 3 |
| L. udekemianus | | | | | | | | 3 | | | | | | | |
| Limnodrilus sp. | | | 6 | | | | | | | | | | | | |
| Bifids | 120 | 181 | 56 | 32 | 20 | 30 | 126 | 57 | 92 | 25 | 10 | 24 | 50 | 18 | 34 |
| H & P A | | | | | 2 | | 42 | | | | | 1 | 20 | | 32 |
| H & P | | | | 8 | | | 30 | | | | | 1 | | | 2 |
| Sp. A | | | | | | | | 48 | | | | | | | |
| Sp. B | | | | | | | | 9 | | | | | | | |
| Sp. C | | | | | | | | 15 | | | | | | | |
| B. unidentata | 5 | | | | | | | | | | | | | | |
| D. digitata | 25 | 48 | 12 | 2 | 5 | 2 | | | | 1 | | 1 | 24 | 36 | 18 |
| D. (A.) flabelliger | | | | | | | | | | | | | | | |
| D. nivea | | | | | | | | | | | | | | | |
| D. trifida | | | | | | | | | | | | | | | |
| N. communis/variabilis | | | | | | | | | | | | | | | |
| N. pardalis | | | 12 | | | | | | | | | | | | |
| Pristinella | | | | | | | | | | | | | | | |
| P. jenkinae | | 85 | 6 | | | | | | | | | | | | |
| Pristina | | | | | | | | | | 1 | | | 2 | | |
| P. proboscidea | | | | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | BD03 | | | D4 | | | D6 | | | D8 | | | D10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| P. synclites | | | | | | | | | | | | | | | |
| S. trivandrana | | 27 | 21 | 4 | 4 | 5 | | | | | | | | | |
| Naididae UID #1 | | | | | | | | | | | | | | | |
| Sparaganophilidae | | | | | | | | | | | | | | | |
| Hygrobates | 5 | 7 | 14 | | | | | | | | | | | | |
| Koenikea | 2 | 3 | 2 | | | | | | | | | | | | |
| Koenikea vidua | 13 | 2 | 1 | | | | | | | | | | | | |
| Mideopsis | 3 | | 1 | | | | | | | | | | | | |
| Sperchon | | | | | | | | | | | | | | | |
| Arrenurus | 1 | 1 | | | | | | | | | | | | | |
| Forelia | | 2 | | | | | | | | | | | | | |
| Centrolimnesia | | | | | | | | 1 | | | | | | | |
| Krendowskia | | | | | | | | | | | | | | | |
| Caecidotea | | | | | | | | | | | | | | | |
| Decapoda | | | | | | | | | | | | | | | |
| Ostracoda | 2046 | 1294 | 1729 | 7 | 4 | 5 | 13 | 27 | 21 | 5 | 22 | 6 | 39 | 28 | 34 |
| Sialis | 5 | 5 | 1 | | | | | | | | | | | | |
| Trichocorixa | 1 | | | | | | | | | | | | | | |
| Berosus | 7 | 26 | 17 | | | | | | | | | | | | |
| Hydrophilidae | | 2 | | | | | | | | | | | | | |
| Hydacticus | 5 | | | | | | | | | | | | | | |
| Tropisternus | 1 | | | | | | | | | | | | | | |
| Stenelmis | | | | | | | | | | | | | | | |
| Gomphus | | | | | | | | | | | | | | | |
| Libellula | 1 | | | | | | | | | | | | | | |
| Perithemis | | 1 | 1 | | | | | | | | | | | | |
| Odonata UID #1 | | | | | | | | | | | | | | | |
| Caenis | | | 1 | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | E2 | | | F4 | | | F6 | | | F8 | | | F10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| P. synclites | 5 | | | | | | | | | | | | | | |
| S. trivandrana | | 12 | | 4 | 1 | 8 | | | 1 | | | | 4 | | 4 |
| Naididae UID #1 | | | 6 | | | | | | | | | | | | |
| Sparaganophilidae | | | | | | | | | | | | | | | |
| Hygrobates | | | | | | | | | | | | | | | |
| Koenikea | | | | | | | | | | | | | | | |
| Koenikea vidua | | | | | | | | | | | | | | | |
| Mideopsis | | | | | | | | | | | | | | | |
| Sperchon | | | | | | | | | 1 | | | | | | |
| Arrenurus | | | | | | | | | | | | | | | |
| Forelia | | | | | | | | | | | | | | | |
| Centrolimnesia | | | | | | | | | | | | | | | |
| Krendowskia | | | | | | | | | | | | | | | |
| Caecidotea | | | | | | | | | | | | | | | |
| Decapoda | | | | | | | | | | | | | | | |
| Ostracoda | 252 | 391 | 253 | | | 2 | 23 | 16 | 11 | 17 | 8 | 15 | 66 | 91 | 111 |
| Sialis | | | | | | | | | | | | | | | |
| Trichocorixa | 1 | | | | | | | | | | | | | | |
| Berosus | | | | | | | | | | | | | | | |
| Hydrophilidae | | | | | | | | | | | | | | | |
| Hydacticus | | | | | | | | | | | | | | | |
| Tropisternus | | | | | | | | | | | | | | | |
| Stenelmis | | | | | | | | | | | | | | | 1 |
| Gomphus | | | | | | | | | | | | | | | |
| Libellula | | | | | | | | | | | | | | | |
| Perithemis | | | | | | | | | | | | | | | |
| Odonata UID #1 | | | | | | | | | | | | | | | |
| Caenis | 1 | | 1 | | | | | | | | | | | | |

TABLE 15 (Continued)

SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | G2 | | | H4 | | | H6 | | | H8 | | | H10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| P. synclites | | | | | | | | | | | | | | | 1 |
| S. trivandrana | | | | | 6 | 6 | 4 | 3 | 2 | | | | 3 | 11 | 4 |
| Naididae UID #1 | | | | | | | | | | | | | | | |
| Sparaganophilidae | | | | | | | | | | | | | | | |
| Hygrobates | | | | | | | | | | | | | | | |
| Koenikea | | | | | | | | | | | | | | | |
| Koenikea vidua | | | | | | | | | | | | | | | 1 |
| Mideopsis | | | | | | | | | | | | | | | |
| Sperchon | | | | | | | | | | | | | | | |
| Arrenurus | | | | | | | | | | | | | | | |
| Forelia | | | | | | | | | | | | | | | |
| Centrolimnesia | | | | | | | | | | | | | | | |
| Krendowskia | | | | | | | | | | | | | 1 | | |
| Caecidotea | | | | | | | | | | | | | | | |
| Decapoda | | | | | | | | | | | | | | | |
| Ostracoda | 11 | 13 | 14 | 17 | 17 | 15 | 15 | 24 | 18 | 24 | 5 | 37 | 29 | 13 | 26 |
| Sialis | | | | | | | | | | | | | | | |
| Trichocorixa | | | | | | | | | | | | | | | |
| Berosus | | | | | | | | | | | | | | | |
| Hydrophilidae | | | | | | | | | | | | | | | |
| Hydacticus | | | | | | | | | | | | | | | |
| Tropisternus | | | | | | | | | | | | | | | |
| Stenelmis | | | | | | | | | | | | | | | |
| Gomphus | | | | | | | | | | | | | | | |
| Libellula | | | | | | | | | | | | | | | |
| Perithemis | | | | | | | | | | | | | | | |
| Odonata UID #1 | | | | | | | | | | | | | | | |
| Caenis | | | | | | | | | | | | | 29 | 1 | 9 |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | J4 | | | J6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | | | | | | | | | |
| P. synclites | | | | | | | | | | | | | | | |
| S. trivandrana | 6 | | | 36 | 3 | 9 | | | | | | | | | |
| Naididae UID #1 | | | | | | | | | | | | | | | |
| Sparaganophilidae | | | | | | | | | | | | | | | |
| Hygrobates | | | | | | | | | | | | | | | |
| Koenikea | | | | | | | | | | | | | | | |
| Koenikea vidua | | | | | | | | | | | | | | | 1 |
| Mideopsis | | | | | | | | | | | | | | | |
| Sperchon | | | | | | | | | | | | | | | |
| Arrenurus | | | | | | | | | | | | | | | |
| Forelia | | | | | | | | | | | | | | | |
| Centrolimnesia | | | | | | | | | | | | | | | |
| Krendowskia | | | | | | | | | | | | | | | |
| Caecidotea | | | | | | | | | | | | | | | |
| Decapoda | | | | | | | | | | | | | | | |
| Ostracoda | 50 | 103 | 622 | 29 | 16 | 20 | | | | | | | | | |
| Sialis | | | | | | | | | | | | | | | |
| Trichocorixa | | | | | | | | | | | | | | | |
| Berosus | | | | | | | | | | | | | | | |
| Hydrophilidae | | | | | | | | | | | | | | | |
| Hydacticus | | | | | | | | | | | | | | | |
| Tropisternus | | | | | | | | | | | | | | | |
| Stenelmis | | | | | | | | | | | | | | | |
| Gomphus | | | | | | | | | | | | | | | |
| Libellula | | | | | | | | | | | | | | | |
| Perithemis | | | | | | | | | | | | | | | |
| Odonata UID #1 | | | | | | | | | | | | | | | |
| Caenis | | | | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | BD03 | | | D4 | | | D6 | | | D8 | | | D10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Siphlonurus | | | | | | | | | | | | | | | |
| Hydroptilidae | | | | | | | | | | | | | | | |
| Orthotrichia | | | | | | | | | | | | | | | |
| Oecetis | | | | | | | | | | | | | | | |
| Ceratopogonidae | 12 | 31 | 32 | 1 | | 1 | | | | | | 1 | | | 1 |
| Chaoborus | | | | 6 | 1 | 2 | 500 | 450 | 454 | 587 | 503 | 512 | 305 | 444 | 347 |
| Chrysops | | | | | | | | | | | | | | | |
| Chironomid pupae | 1 | 1 | | | | | | | | | | | | | 1 |
| Clinotanypus | 30 | 26 | 36 | | | | | | | | | | | | |
| Coelotanypus | | | | | | | | | | | | | | | |
| Procladius | 15 | 10 | 25 | | | | | 1 | | | | | | | |
| Tanypus | 111 | 32 | 78 | | | 1 | | | 1 | | | 1 | 2 | | 3 |
| Nanocladius | | | | | | | | | | | | | | | |
| Chironomus | | | | | | | | 4 | | | | | | | |
| Chironomus sp. A | | | | | | | | | | | | | | | |
| Cladotanytarsus | 15 | 2 | 4 | 2 | 3 | 2 | 1 | | | | | | 1 | 1 | 1 |
| Cryptochironomus | | 1 | | | 1 | | 1 | 1 | 1 | | | | | | 4 |
| Dicrotendipes | 5 | | | 4 | | | 2 | 14 | 3 | | | | 1 | | |
| Microchironomus | 15 | | 8 | 3 | | | | | | | | | 1 | | 20 |
| Microtendipes | | | | | | | | | | | | | | | |
| Paratanytarsus | | | | | 1 | | | | | | | | | | |
| Polypedilum | | | | | | | | | | | | | | | |
| P. pedestre | | | | | | | | 1 | | | | | | | |
| Tanytarsus | | | 8 | | | | | | | | | | | | |
| Tanytarsini | | | | | | | | 1 | | | | | | | |
| UID | | | | | | | | | | | | | | | |
| Ferrissia | | | | | | | | | | | | | | | |
| C. cincinnatiensis | | | | | | | | | | | | | | | |

# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | E2 | | | F4 | | | F6 | | | F8 | | | F10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Siphlonurus | | | | | | | | | | | | | | | |
| Hydroptilidae | | | | | | | | | | | | | | | |
| Orthotrichia | | | 1 | | | | | | | | | | | | |
| Oecetis | | 1 | 1 | | | | | | | | | | | | |
| Ceratopogonidue | 2 | 11 | 7 | | | | 5 | 4 | 2 | | | | 2 | 8 | 9 |
| Chaoborus | | | 1 | | | 5 | 192 | 207 | 169 | 450 | 205 | 321 | 7 | 5 | 34 |
| Chrysops | | | | | | | | | | | | | | | |
| Chironomidpupae | 4 | 3 | 10 | | | | | | | | 1 | | | | |
| Clinotanypus | | | | | | | | | | | | | | | |
| Coelotanypus | | | | | | | | 5 | 2 | | | | | | |
| Procladius | | | | | | | | | 1 | | | | 1 | | 3 |
| Tanypus | | 56 | | | | | 34 | 30 | 26 | 4 | | 1 | 2 | 2 | 10 |
| Nanocladius | | | | | | | | | | | | | | | |
| Chironomus | | 84 | | | | | | | | | | | | | |
| Chironomus sp. A | | | 21 | | | | | | | | | | | | |
| Cladotanytarsus | 485 | 784 | 735 | 1 | 1 | 1 | | | | | | | | | |
| Cryptochironomus | 46 | 84 | 63 | | 1 | 1 | 1 | | | | | | 4 | 1 | 2 |
| Dicrotendipes | | | 147 | | | | | | | | | | | | 1 |
| Microchironomus | 15 | 112 | 42 | | 1 | 1 | | | | | | | | 1 | |
| Microtendipes | | | | | | | | | | | | | | | |
| Paratanytarsus | | | | | | | | | | | | | | | |
| Polypedilum | 77 | 336 | 147 | 1 | | | | | | | | | | | |
| P. pedestre | | | | | | | | | | | | | | | |
| Tanytarsus | | | | | | | | | | | | | | | |
| Tanytarsini | | | | | | | | | | | | | | | |
| UID | | | | | | | | | | | | | | | |
| Ferrissia | | 1 | | | | | | | | | | | | | |
| C. cincinnatiensis | 14 | 14 | 8 | | | | | | | | | | | | |

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## TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | G2 | | | H4 | | | H6 | | | H8 | | | H10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Siphlonurus | | | | | | | | | | | | | | | |
| Hydroptilidae | | | | | | | | | | | | | | | |
| Orthotrichia | | | | | | | | | | | | | | | |
| Oecetis | | | | | | | | | | | | | 1 | | 1 |
| Ceratopogonidae | 3 | | | | 5 | 3 | 1 | 1 | 1 | 12 | 1 | 1 | 2 | 1 | 2 |
| Chaoborus | 12 | 18 | 24 | 72 | 68 | 104 | 154 | 195 | 168 | 201 | 134 | 210 | 2 | | 3 |
| Chrysops | | | | | | | | | | | | | | | |
| Chironomid pupae | | 2 | 1 | 1 | | | | | | | | | | | |
| Clinotanypus | | | | | | | | | | | | | | | |
| Coelotanypus | 2 | | | 2 | | 2 | | 10 | 3 | | | 12 | | | |
| Procladius | 2 | 1 | | | 1 | 1 | | | | | | | 9 | 1 | 2 |
| Tanypus | 2 | 4 | | 7 | 2 | 9 | 135 | 215 | 139 | 114 | 52 | 266 | 8 | | 1 |
| Nanocladius | | | | | | | | | | | | | | | |
| Chironomus | | 1 | | | | | 3 | | | | | | 16 | | |
| Chironomus sp. A | | | | | | | | | | | | | | | |
| Cladotanytarsus | | | | | | | | | | | | | 32 | | 2 |
| Cryptochironomus | 3 | 5 | | 1 | | 1 | | | 6 | | | | 48 | 1 | 7 |
| Dicrotendipes | | | | | | | | | | | | 1 | 56 | 5 | 7 |
| Microchironomus | 23 | 50 | 1 | 5 | | 5 | | | | | | | 16 | | 1 |
| Microtendipes | | | | | | | | | | | | | 16 | | 1 |
| Paratanytarsus | | | | | | | | | | | | | | | |
| Polypedilum | 1 | | | | | | | | | | | | | | |
| P. pedestre | | | | | | | | | | | | | | | |
| Tanytarsus | | | | | | | | | | | | | | | |
| Tanytarsini | | | | | | | | | | | | | | | |
| UID | | | | | | | | | | | | | | | |
| Ferrissia | | | | | | | | | | | | 1 | | | |
| C. cincinnatiensis | | | | | | | | | | | | | | | |

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | J4 | | | J6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | | | | | | | | | |
| Siphlonurus | | | | | | | | | | | | | | | |
| Hydroptilidae | | | | | | | | | | | | | | | |
| Orthotrichia | | | | | | | | | | | | | | | |
| Oecetis | | | | | | | | | | | | | | | |
| Ceratopogonidue | 4 | 12 | 1 | 27 | 14 | 12 | | | | | | | | | |
| Chaoborus | 5 | 7 | 1 | 73 | 52 | 58 | | | | | | | | | |
| Chrysops | | | | | | | | | | | | | | | |
| Chironomidpupae | | | | | | | | | | | | | | | |
| Clinotanypus | | | | | | | | | | | | | | | |
| Coelotanypus | | | | | | 2 | | | | | | | | | |
| Procladius | | | 1 | 6 | 6 | 10 | | | | | | | | | |
| Tanypus | 2 | 3 | 7 | 64 | 42 | 48 | | | | | | | | | |
| Nanocladius | | | | | | | | | | | | | | | |
| Chironomus | | | | | | 1 | | | | | | | | | |
| Chironomus sp. A | | | | | | | | | | | | | | | |
| Cladotanytarsus | | | | | | | | | | | | | | | |
| Cryptochironomus | 4 | 4 | 3 | 9 | 8 | 8 | | | | | | | | | |
| Dicrotendipes | | 1 | 2 | | | | | | | | | | | | |
| Microchironomus | 10 | 1 | 2 | 36 | 20 | 20 | | | | | | | | | |
| Microtendipes | | | | | | | | | | | | | | | |
| Paratanytarsus | | | | | | | | | | | | | | | |
| Polypedilum | | | | | | | | | | | | | | | |
| P. pedestre | | | 1 | | | | | | | | | | | | |
| Tanytarsus | | | | | | | | | | | | | | | |
| Tanytarsini | | | 3 | | | | | | | | | | | | |
| UID | | | | | | | | | | | | | | | |
| Ferrissia | | | | | | | | | | | | | | | |
| C. cincinnatiensis | | | | | | | | | | | | | | | |

TABLE 15 (C...tinued)

SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | BD03 | | | D4 | | | D6 | | | D8 | | | D10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planorbidae | 1 | | | | | | | | | | | | | | |
| Physella | 1 | 1 | | | | | | | | | | | | | |
| Corbicula | | | | | | | | | | | | | | | |
| Pisidium | | | | | | | | | | | | | | | |
| Sphaerium | 1 | 1 | | | | | | | 1 | | | 2 | | | |
| Quadrula | | | | | | | | | | | | | | | |
| Toxolasma | | | | | | | | | | | | | | | |
| Musculium | 1 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| **No. individuals/replicate** | 2419 | 1637 | 2149 | 104 | 113 | 72 | 536 | 514 | 499 | 613 | 554 | 539 | 386 | 510 | 465 |
| | | | | | | | | | | | | | | | |
| **Mean no. individuals/site** | | 2069 | | | 96 | | | 516 | | | 569 | | | 454 | |
| | | | | | | | | | | | | | | | |
| **Mean no. individuals/site** | | 379 | | | 91 | | | 496 | | | 558 | | | 420 | |
| **(excluding ostracods)** | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| **Mean no. individuals/site** | | 379 | | | 89 | | | 28 | | | 24 | | | 55 | |
| **(excluding ostracods & Chaoborus)** | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| **No. taxa/replicate** | 30 | 26 | 24 | 17 | 11 | 13 | 9 | 10 | 11 | 7 | 6 | 6 | 12 | 7 | 11 |
| | | | | | | | | | | | | | | | |
| **Total no. taxa/site** | | 39 | | | 22 | | | 16 | | | 10 | | | 15 | |

3 8 1052

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3 8 1053

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# TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | F2 | | | F4 | | | F6 | | | F8 | | | F10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planorbidae | | | | | | | | | | | | | | | |
| Physella | | | | | | | | | | | | | | | |
| Corbicula | | 1 | | | | | | | | | | | | | |
| Pisidium | | | | | | | | | | | | | | | |
| Sphaerium | | | | | | | | | | | | | | | |
| Quadrula | 1 | 1 | | | | | | | | | | | | | |
| Toxolasma | | | | | | | | | | | | | | | |
| Musculium | | | | | | | | | | | | | | | |
| **No. individuals/replicate** | 1279 | 3123 | 1951 | 71 | 47 | 97 | 467 | 397 | 306 | 512 | 224 | 366 | 190 | 170 | 272 |
| **Mean no. individuals/site** | | 2118 | | | 72 | | | 390 | | | 368 | | | 210 | |
| **Mean no. individuals/site** | | 1819 | | | 71 | | | 373 | | | 355 | | | 121 | |
| **(excluding ostracods)** | | | | | | | | | | | | | | | |
| **Mean no. individuals/site** | | 1578 | | | 69 | | | 184 | | | 30 | | | 106 | |
| **(excluding ostracods & Chaoborus)** | | | | | | | | | | | | | | | |
| **No. taxa/replicate** | 17 | 22 | 24 | 8 | 8 | 11 | 8 | 10 | 9 | 7 | 3 | 7 | 14 | 9 | 16 |
| **Total no. taxa/site** | | 33 | | | 14 | | | 17 | | | 9 | | | 18 | |

## TABLE 15 (C .inued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | G2 | | | H4 | | | H6 | | | H8 | | | H10 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Replicate** | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| Planorbidae | | | | | | | | | | | | | | | |
| Physella | | | | | | | | | | | | | | | |
| Corbicula | | | | | | | | | | | | | 1 | | |
| Pisidium | | | | | | | | | | | | | 3 | | 1 |
| Sphaerium | | | | | | | | | | | | | | | |
| Quadrula | | | | | | | | | | | | | | | |
| Toxolasma | | | | | | | | | | | | | | | |
| Musculium | | | | | | | | | | | | | | | |
| **No. individuals/replicate** | 188 | 285 | 183 | 233 | 226 | 274 | 460 | 592 | 432 | 454 | 245 | 692 | 386 | 55 | 113 |
| **Mean no. individuals/site** | | 219 | | | 244 | | | 495 | | | 464 | | | 185 | |
| **Mean no. individuals/site** | | 206 | | | 228 | | | 476 | | | 442 | | | 162 | |
| **(excluding ostracods)** | | | | | | | | | | | | | | | |
| **Mean no. individuals/site** | | 188 | | | 147 | | | 304 | | | 260 | | | 160 | |
| **(excluding ostracods & Chaoborus)** | | | | | | | | | | | | | | | |
| **No. taxa/replicate** | 13 | 15 | 9 | 13 | 12 | 15 | 8 | 13 | 10 | 10 | 8 | 11 | 25 | 12 | 27 |
| **Total no. taxa/site** | | 18 | | | 18 | | | 15 | | | 14 | | | 32 | |

3 8 1054

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## TABLE 15 (Continued)

## SUMMARY OF MACROINVERTEBRATE RESULTS

| Benthic Invertebrate Sample Location | J4 | | | J6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Replicate | A | B | C | A | B | C | | | | | | | | | |
| Planorbidae | | | | | | | | | | | | | | | |
| Physella | | | | | | | | | | | | | | | |
| Corbicula | | | | | | | | | | | | | | | |
| Pisidium | | | | | 2 | | | | | | | | | | |
| Sphaerium | | | | | | | | | | | | | | | |
| Quadrula | | | | | | | | | | | | | | | |
| Toxolasma | | | | | | | | | | | | | | | |
| Musculium | | | | | | | | | | | | | | | |
| **No. individuals/replicate** | 166 | 281 | 774 | 523 | 248 | 323 | | | | | | | | | |
| **Mean no. individuals/site** | | 407 | | | 365 | | | | | | | | | | |
| **Mean no. individuals/site (excluding ostracods)** | | 149 | | | 343 | | | | | | | | | | |
| **Mean no. individuals/site (excluding ostracods & Chaoborus)** | | 145 | | | 282 | | | | | | | | | | |
| **No. taxa/replicate** | 11 | 11 | 14 | 16 | 16 | 16 | | | | | | | | | |
| **Total no. taxa/site** | | 17 | | | 22 | | | | | | | | | | |

NOTES: 1 Macroinvertebrate samples collected November 4-8, 1991

3 8 1 0 5 5

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## TABLE 16

## MEAN NUMBERS OF INDIVIDUALS OF SELECTED BENTHIC MACROINVERTEBRATES AT EACH SAMPLING SITE[1]

| Site | Aberrant Oligochaetes | A. Pigueti | D. Digitata | Clinotanypus |
|---|---|---|---|---|
| B4 | 9 | 13 | 24 | 0 |
| B6 | 5 | 0 | 1 | 0 |
| B8 | 0 | 0 | 2 | 0 |
| B10 | 0 | 42 | 21 | 51 |
| BD1 | 0 | 188 | 11 | 29 |
| BD3 | 5 | 56 | 3 | 31 |
| D4 | 0 | 18 | 4 | 0 |
| D6 | 0 | 0 | 1 | 0 |
| D8 | 4 | 0 | 1 | 0 |
| D10 | 3 | 0 | 2 | 0 |
| E2 | 0 | 36 | 28 | 0 |
| F4 | 1 | 19 | 3 | 0 |
| F6 | 14 | 1 | 0 | 0 |
| F8 | 0 | 0 | 1 | 0 |
| F10 | 17 | 1 | 26 | 0 |
| G2 | 7 | 4 | 6 | 0 |
| H4 | 7 | 2 | 6 | 0 |
| H6 | 29 | 5 | 0 | 0 |
| H8 | 31 | 0 | 1 | 0 |
| I10 | 3 | 10 | 22 | 0 |
| J4 | 12 | 5 | 10 | 0 |
| J6 | 10 | 7 | 4 | 0 |

NOTES:

1 Samples collected November 4-8, 1991.

**TABLE 17** 3 8 1057

## SUMMARY OF FISH COLLECTED OR OBSERVED DURING FISH SAMPLING IN OPERABALE UNIT 2[1]

| | Electrofishing | | Hoopnets | | Gillnets | |
|---|---|---|---|---|---|---|
| | No. | C/E[2] | No. | C/E[2] | No. | C/E[2] |
| Spotted gar (Lepisosteus oculatus) | 5 | 1.1 | | | 12 | 0.14 |
| Longnose gar (Lepisosteus osseus) | | | | | 10 | 0.11 |
| American eel (Anguilla rostrata) | 16 | 3.6 | | | | |
| Skipjack herring (Alosa chrysochloris) | | | | | 3 | 0.04 |
| Gizzard shad (Dorosoma cepedianum) | | | | | 10 | 0.11 |
| Silvery minnow (Hybognathus nuchalis) | 12 | 2.7 | | | | |
| Golden shiner (Notemigonus crysoleucas) | 80 | 17.8 | | | | |
| Common carp (Cyprinus carpio) | 3 | 0.7 | | | 1 | 0.01 |
| Quillback (Carpiodes cyprinus) | 2 | 0.4 | | | 53 | 0.63 |
| Smallmouth buffalo (Ictiobus bubalus) | | | | | 59 | 0.70 |
| Blacktail redhorse (Moxostoma poecilurum) | 1 | 0.2 | | | | |
| Blue catfish (Ictalurus furcatus) | | | | | 5 | 0.06 |
| Channel catfish (Ictalurus punctatus)[3] | 2 | 0.4 | | | 22 | 0.26 |
| Chain pickerel (Esox niger) | | | | | 1 | 0.01 |
| White bass (Morone chrysops) | 2 | 0.4 | | | 1 | 0.01 |
| Warmouth (Lepomis gulosus) | 10 | 2.2 | | | | |
| Bluegill (Lepomis macrochirus) | 595 | 132.2 | 13 | 0.03 | 1 | 0.01 |
| Redear sunfish (Lepomis microlophus) | 1 | 0.2 | 14 | 0.04 | | |
| Largemouth bass (Micropterus salmoides)[3] | 53 | 11.8 | | | 1 | 0.01 |
| Black crappie (Pomoxis nigromaculatus) | 1 | 0.2 | 1 | <0.01 | 5 | 0.06 |
| Freshwater drum (Aplodinotus grunniens) | | | | | 3 | 0.04 |
| Striped mullet (Mugil cephalus) | 27 | 6.0 | | | 21 | 0.25 |
| Hogchoker (Trinectes maculatus) | 2 | 0.4 | | | | |
| Total effort (gear hours) | 4.5 | | 377 | | 84 | |
| Overall C/E (all species) | 180.3 | | 0.07 | | 2.5 | |
| No. species | 16 | | 3 | | 16 | |

NOTES:

[1] Samples collected week of November 4-8, 1991.
[2] C/E - "catch-per-effort" (specimens per gear-hour).
[3] 22 specimens used for tissue analyses.

## TABLE 18

## SUMMARY OF FISH ANALYSES[1] IN OPERABLE UNIT 2

(All Concentrations in mg/kg)

| Field Sample ID | Mercury | 4,4'-DDD | 4,4'-DDE | 4,4'-DDT | Chlorobenzene | Hexachlorobenzene | Pentachlorobenzene |
|---|---|---|---|---|---|---|---|
| CC-E4-27-WB | U | 11 | 17 | 1JN | U | 1.8JN | U |
| CC-G1-42-WB | 0.33 | 4.5 | 5 | 0.27JN | U | 1.2 | U |
| CC-G1-43-WB | 0.6 | 3.3 | 5.7 | 0.16JN | U | 0.84 | U |
| CC-G1-44-WB | 0.32 | 2.1 | 4.2 | U | U | 0.64JN | U |
| CC-G3-09-WB | 0.49 | 0.96 | 3.1 | U | U | 0.22JN | U |
| CC-G3-11-WB | 0.41 | 0.91 | 3 | U | U | 0.32JN | U |
| CC-G3-13-WB | 0.42 | 0.49JN | 2.5 | U | U | 0.16JN | U |
| CC-G3-15-WB | 0.46 | 0.62JN | 2.3 | U | U | 0.41JN | U |
| CC-G3-17-WB | 0.44 | 1.9 | 4.1 | 0.093JN | U | 0.41JN | U |
| CC-G3-19-WB | 0.45 | 2.2 | 2.6 | 0.067JN | U | 0.73 | U |
| CC-G1-41-FI | 0.62 | 0.41JN | 0.67JN | U | U | U | U |
| CC-G2-38-FI | 0.57 | 1.2 | 2.2 | 0.17JN | U | 0.31JN | U |
| CC-G2-39-FI | 0.63 | 2.6 | 3.8 | 0.24JN | U | U | U |
| CC-G2-40-FI | 0.57 | 1.5 | 2.3 | 0.2JN | U | 0.25JN | U |
| CC-G3-10-FI | 0.29 | 0.69 | 1.3 | U | U | 0.22JN | U |
| CC-G3-12-FI | 0.28 | 3 | 5.9 | 0.36J | U | 0.58JN | U |
| CC-G3-14-FI | 0.67 | 1 | 2.1 | U | U | 0.25JN | U |
| CC-G3-16-FI | 0.39 | 0.33JN | 0.85JN | U | U | 0.18JN | U |
| CC-G3-18-FI | 0.52 | 0.64JN | 1.4JN | U | U | 0.2JN | U |
| CC-G3-20-FI | 0.61 | 0.59JN | 1.6JN | U | U | U | U |
| LB-E1-02-WB | 0.7 | 5.8 | 8.8 | 0.87 | U | 1 | 0.07JN |
| LB-E1-03-WB | 0.84 | 8 | 12 | 0.66JN | 0.00486JN | 0.96JN | U |
| LB-E3-21-WB | 0.91 | 8.5 | 13 | 1.2JN | U | 0.8JN | U |
| LB-E3-23-WB | 0.77 | 22 | 24 | 0.89JN | U | 1.2JN | U |
| LB-E3-25-WB | 0.47 | 8.9 | 12 | 0.34JN | U | 1.4 | U |
| LB-E5-28-WB | 0.79 | 8 | 12 | 0.44JN | U | 1.0JN | U |
| LB-E5-30-WB | 0.76 | 11 | 16 | 0.5JN | U | 2.5JN | U |
| LB-E5-32-WB | 0.7 | 5.2 | 8.8 | 0.2JN | U | 1.6 | U |
| LB-E6-34-WB | 0.76 | 3 | 5.9 | 0.36JN | U | 0.58JN | U |
| LB-G1-37-WB | 1.2 | 2.8 | 4.2 | U | U | 0.23JN | U |
| LB-E2-05-FI | 1.5 | 2.6 | 3.9 | 0.43J | U | 0.18JN | U |
| LB-E2-06-FI | 1.8 | 1.2 | 2 | 0.16JN | U | 0.12JN | U |
| LB-E3-22-FI | 1.4 | 0.81 | 1.7 | U | U | 0.13JN | U |
| LB-E3-24-FI | 2.2 | 1.3 | 2.6 | 0.082JN | U | 0.14JN | U |
| LB-E4-26-FI | 1.7 | 1.7 | 3.2 | 0.2JN | U | 0.12JN | U |
| LB-E5-29-FI | 1.7 | 3.1 | 4.9 | 0.47JN | U | 0.19JN | U |
| LB-E5-31-FI | 1.8 | 3.8 | 5.8 | 0.36JN | U | 0.2JN | U |
| LB-E6-33-FI | 0.9 | 0.54JN | 1.1 | U | U | 0.15JN | U |
| LB-E6-35-FI | 1.5 | 0.84 | 2 | U | U | 0.13JN | U |
| LB-E6-36-FI | 0.99 | 0.42JN | 0.98 | U | U | U | U |

NOTES:

1 = Samples collected November 4-8, 1991.
CC = Channel Catfish
LB = Largemouth Bass
WB = Whole Body
FI = Fillet
J = Estimated concentration
N = Presumptive Evidence of Compound
U = Not detected at or above the quantitation limit; quantitation limit varies with sample.

## TABLE 19

3 8 1059

## SUMMARY OF AGES, WEIGHTS, LENGTHS AND CONDITION FACTORS FOR FISH COLLECTED IN OPERABLE UNIT 2[1]

| Field Sample | Age (yrs) | Weight (gms) | Length (mm) | $K_T$[2] |
|---|---|---|---|---|
| CC-E4-27-WB | II+ | 852 | 446 | .96 |
| CC-G1-42-WB | I+ | 170 | 276 | .81 |
| CC-G1-43-WB | I+ | 114 | 236 | .87 |
| CC-G1-44-WB | I+ | 142 | 252 | .89 |
| CC-G3-09-WB | I+ | 142 | 224 | 1.26 |
| CC-G3-11-WB | <I | 114 | 215 | 1.15 |
| CC-G3-13-WB | <I | 85 | 191 | 1.22 |
| CC-G3-15-WB | <I | 85 | 206 | .97 |
| CC-G3-17-WB | I+ | 142 | 252 | .89 |
| CC-G3-19-WB | I+ | 142 | 242 | 1.00 |
| CC-G1-41-FI | I+ | 227 | 303 | .82 |
| CC-G2-38-FI | III+ | 1,022 | 481 | .92 |
| CC-G2-39-FI | II+ | 795 | 433 | .98 |
| CC-G2-40-FI | II+ | 568 | 414 | .80 |
| CC-G3-10-FI | I+ | 256 | 310 | .86 |
| CC-G3-12-FI | I+ | 170 | 266 | .90 |
| CC-G3-14-FI | I+ | 199 | 276 | .95 |
| CC-G3-16-FI | I+ | 199 | 276 | .95 |
| CC-G3-18-FI | I+ | 142 | 232 | 1.14 |
| CC-G3-20-FI | <I | 114 | 216 | 1.13 |
| LB-E1-02-WB | II+ | 511 | 318 | 1.59 |
| LB-E1-03-WB | II+ | 483 | 312 | 1.59 |
| LB-E3-21-WB | II+ | 483 | 328 | 1.37 |
| LB-E3-23-WB | II+ | 710 | 354 | 1.60 |
| LB-E3-25-WB | II+ | 682 | 363 | 1.43 |
| LB-E5-28-WB | I+ | 341 | 298 | 1.29 |
| LB-E5-30-WB | II+ | 540 | 332 | 1.48 |
| LB-E5-32-WB | II+ | 511 | 334 | 1.37 |
| LB-E6-34-WB | II+ | 539 | 340 | 1.37 |
| LB-G1-37-WB | <I | 142 | 214 | 1.45 |
| LB-E2-05-FI | V+ | 1,562 | 470 | 1.50 |
| LB-E2-06-FI | IV+ | 1,562 | 432 | 1.94 |
| LB-E3-22-FI | II+ | 710 | 338 | 1.84 |
| LB-E3-24-FI | III+ | 1,108 | 409 | 1.62 |
| LB-E4-26-FI | V+ | 1,732 | 480 | 1.57 |
| LB-E5-29-FI | III+ | 1,074 | 343 | 1.78 |
| LB-E5-31-FI | III+ | 1,306 | 422 | 1.74 |
| LB-E6-33-FI | III+ | 795 | 360 | 1.70 |
| LB-E6-35-FI | II+ | 426 | 331 | 1.17 |
| LB-E6-36-FI | II+ | 483 | 323 | 1.43 |

NOTES:
1 Fish collected from the Olin McIntosh Basin the week of November 4-8, 1991.
2 From Handbook of Freshwater Fishery Biology Carlander (1969). Formula for calculations of Conditions Factors: $K = \frac{W \times 10^5}{L^3}$. $K_T$ is based on total length.

# TABLE 20

3 8 1060

## COMPARISON OF CONDITION FACTORS DETERMINED FROM FISH COLLECTED FROM OPERABLE UNIT 2 TO REFERENCE VALUES

| Species | Olin McIntosh Basin[1] Length Range (mm) | N | $K_T$ Factors[3] Olin Basin Mean | $K_T$ Factors[3] Olin Basin Range | $K_T$ Factors[3] Reference Mean | $K_T$ Factors[3] Reference Range | Reference[2] Length Range (mm) | Reference[2] N |
|---|---|---|---|---|---|---|---|---|
| Largemouth Bass | <250 | 1 | 1.45 | NA | 1.27 | (1.19-1.37) | 76-254 | 5,794 |
| | 298-393 | 15 | 1.49 | (1.08-1.84) | 1.39 | (1.36-1.41) | 279-406 | 436 |
| | 409-480 | 6 | 1.64 | (1.46-1.94) | 1.51 | (1.48-1.66) | 432-533 | 52 |
| Smallmouth Bass | 176-357 | 59 | 1.48 | (0.95-2.91) | 1.53 | (1.33-1.83) | 76-762 | 3,812 |
| Quillback | 176-338 | 53 | 1.46 | (0.93-2.02) | 1.39 | (1.16-2.22) | 50-483 | 956 |
| Black Crappie | 166-304 | 6 | 1.27 | (1.01-1.62) | 4 | (1.00-1.45) | 4 | 4 |
| Gizzard Shad | 170-306 | 10 | 1.05 | (0.60-1.56) | 4 | (0.82-1.19) | 4 | 4 |
| Longnose Gar | 534-793 | 10 | 0.28 | (0.22-0.33) | 4 | (0.13-0.14) | 127-1,194 | 118 |
| Spotted Gar | 440-684 | 12 | 0.34 | (0.13-0.47) | 4 | (0.28-0.49) | 380-490 | 243 |
| Bluegill | 120-180 | 6 | 2.03 | (1.33-2.91) | 2.27 | (0.91-3.05) | 125-235 | 243 |
| Channel Catfish | 191-446 | 24 | 0.93 | (0.37-1.26) | 0.75 | (0.50-1.19) | 106-635 | 154 |

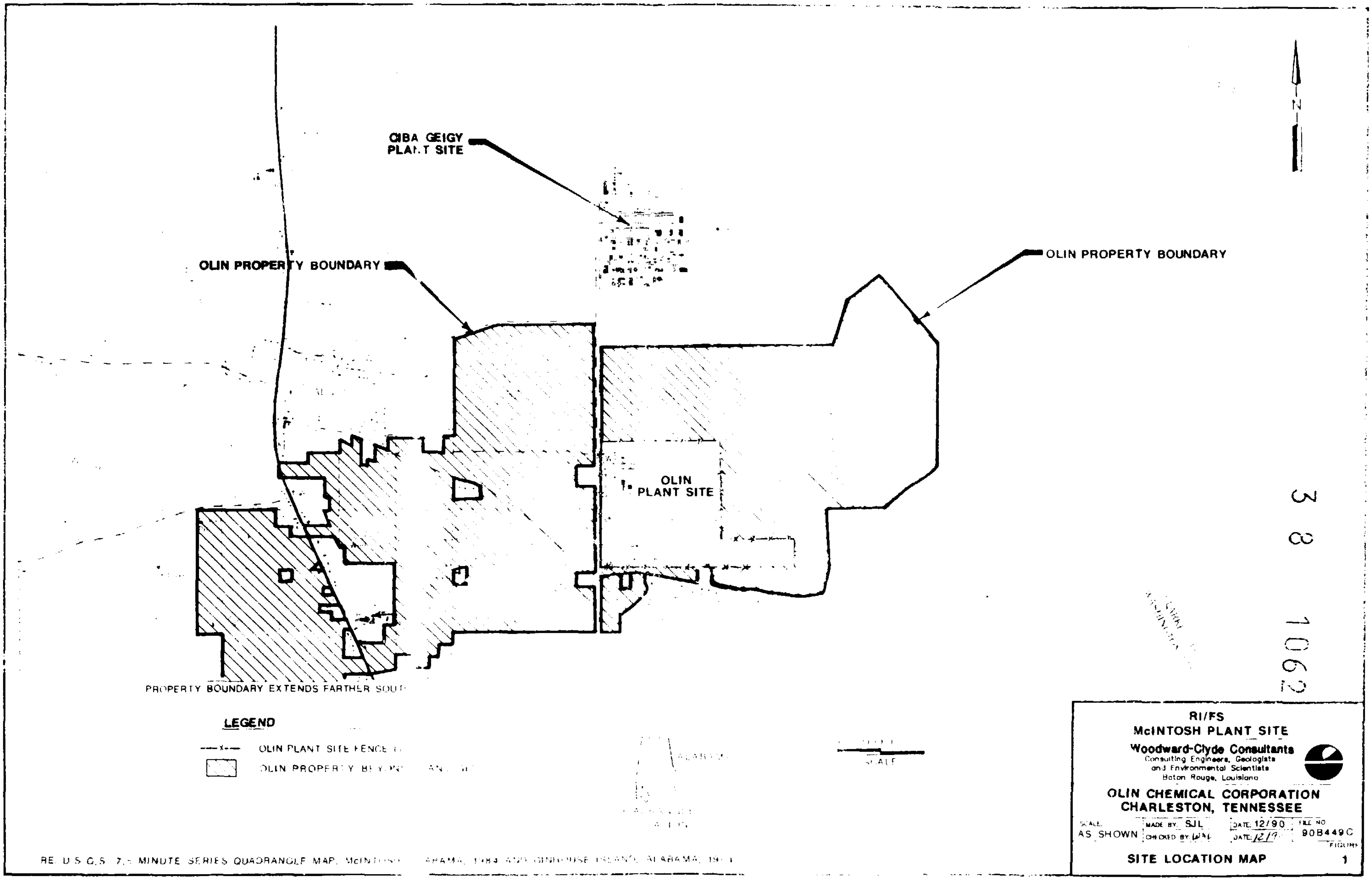
NOTES:

1 All samples collected week of November 4-8, 1991.
2 Reference values are from Carlander 1969, 1977. All values are based on fish obtained from Alabama except bluegill (North Carolina) and channel catfish (Oklahoma).
3 From Handbook of Freshwater Fishery Biology Carlander (1969). Formula for calculations of Conditions Factors: $K = \frac{W \times 10^5}{L^3}$. $K_T$ is based on total length.
4 Information not provided.
N Number of samples.
NA Not applicable.

Woodward-Clyde Consultants

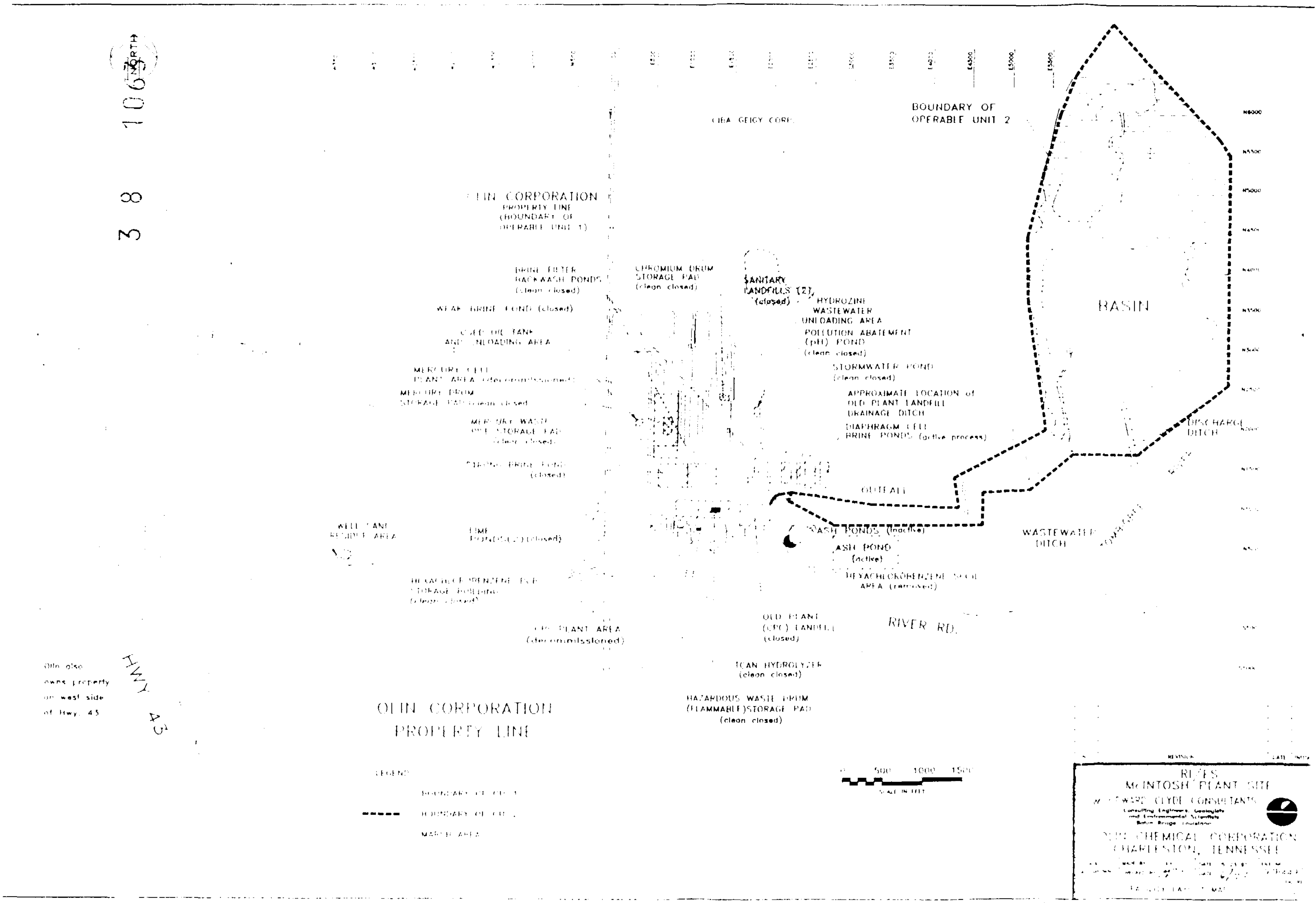
3 8 1061

# FIGURES



CIBA GEIGY PLANT SITE
OLIN PROPERTY BOUNDARY
OLIN PROPERTY BOUNDARY
OLIN PLANT SITE
PROPERTY BOUNDARY EXTENDS FARTHER SOUTH
LEGEND
OLIN PLANT SITE FENCE
OLIN PROPERTY
SCALE
RE: U.S.G.S. 7.5 MINUTE SERIES QUADRANGLE MAP, McINTOSH, ALABAMA, 1984
RI/FS
McINTOSH PLANT SITE
Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana
OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE
SCALE: AS SHOWN
MADE BY: SJL
DATE: 12/90
FILE NO. 90B449C
SITE LOCATION MAP
FIGURE 1


38 1062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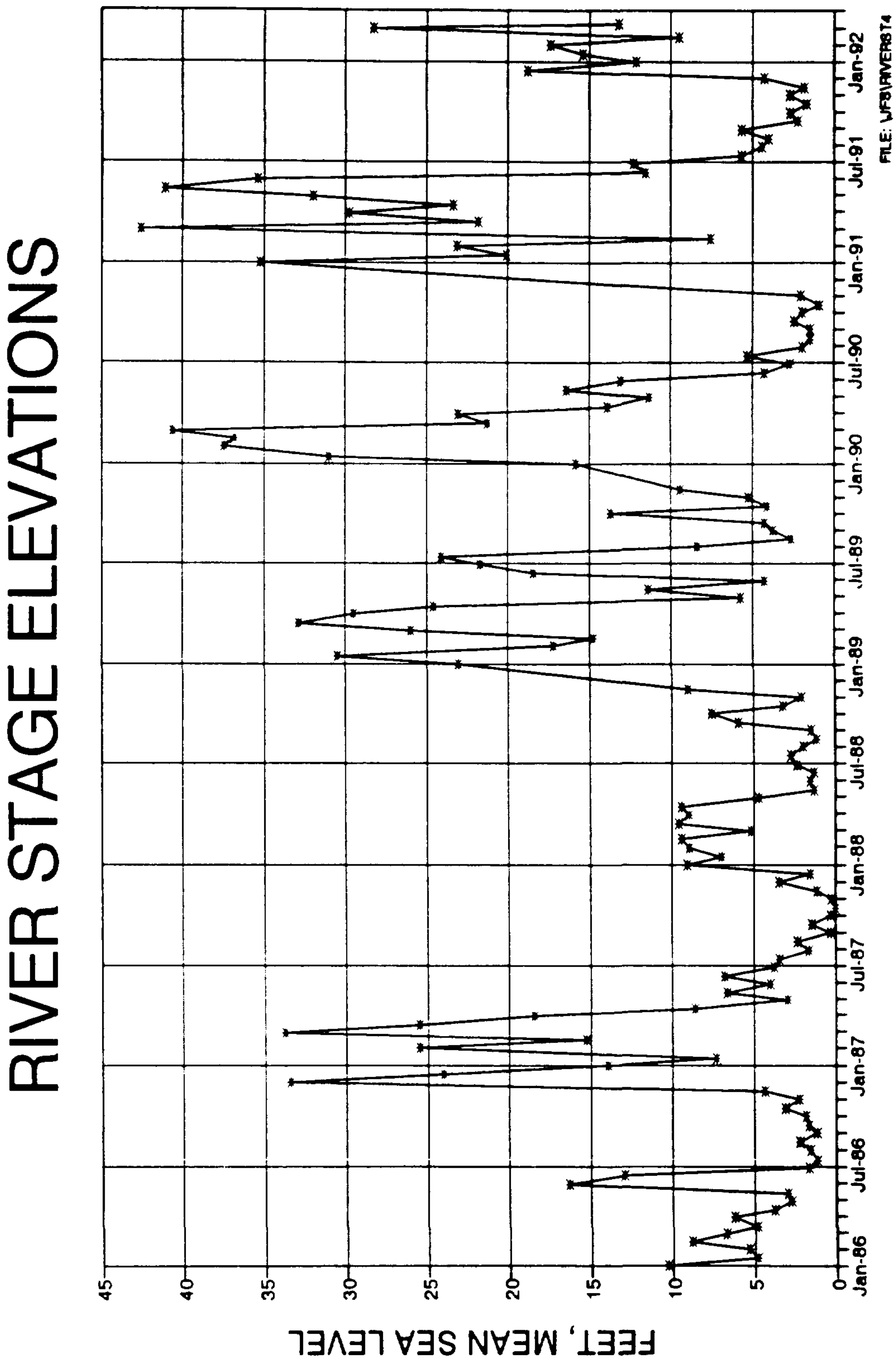
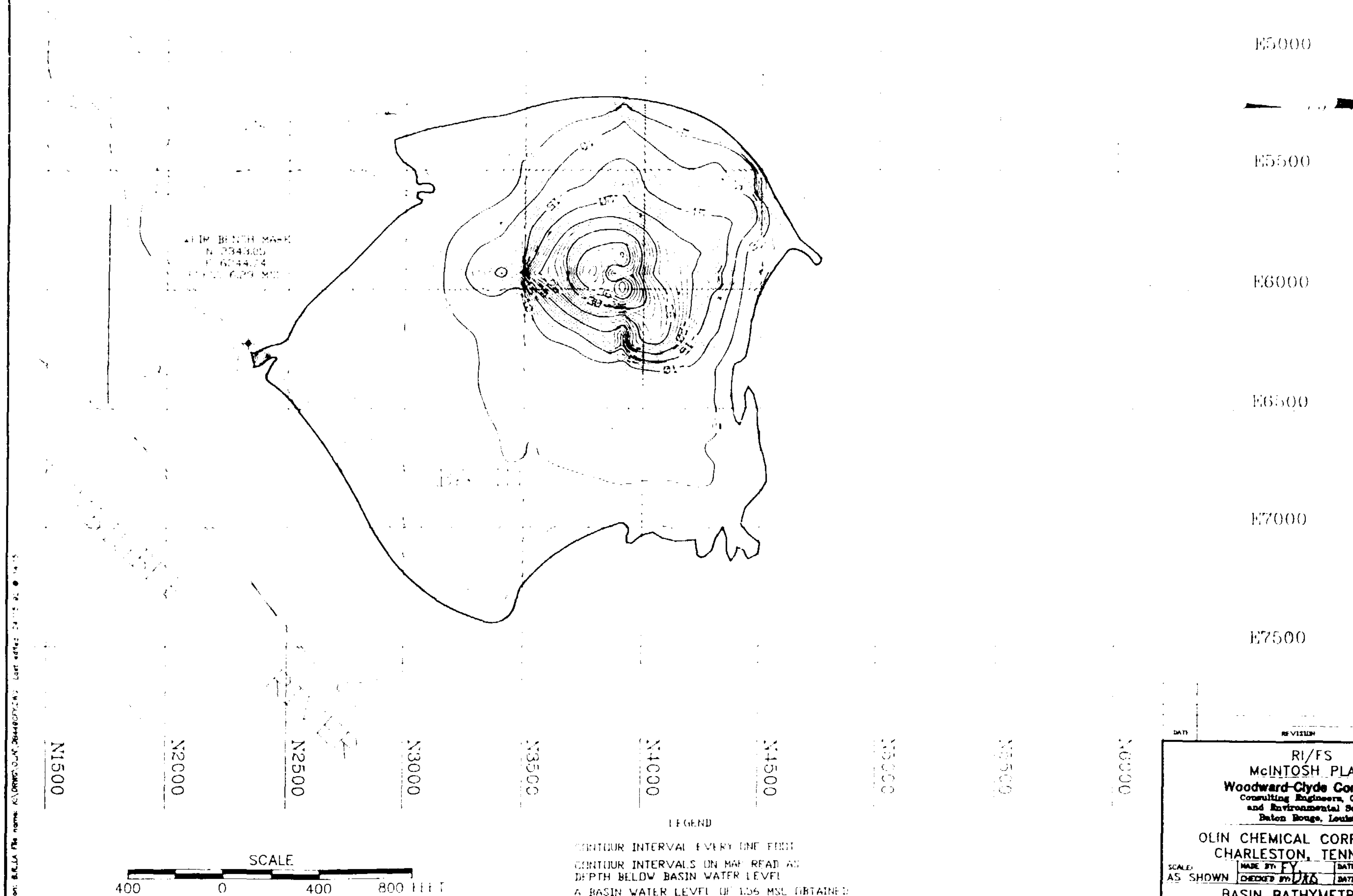
CIBA GEIGY CORP.
OLIN CORPORATION
PROPERTY LINE
(BOUNDARY OF
OPERABLE UNIT 1)
BRINE FILTER
BACKWASH PONDS
(clean closed)
CHROMIUM DRUM
STORAGE PAD
(clean closed)
SANITARY
LANDFILLS (2)
(closed)
HYDROZINE
WASTEWATER
UNLOADING AREA
POLLUTION ABATEMENT
(pH) POND
(clean closed)
WEAK BRINE POND (closed)
AND UNLOADING AREA
MERCURY CELL
MERCURY DRUM
STORAGE PAD
STORMWATER POND
(clean closed)
APPROXIMATE LOCATION of
OLD PLANT LANDFILL
DRAINAGE DITCH
DIAPHRAGM CELL
BRINE PONDS (active process)
BASIN
DISCHARGE
DITCH
(closed)
OUTFALL
WASTEWATER
DITCH
ASH PONDS (inactive)
ASH POND
(active)
LIME
WELL TANK
RESIDUE AREA
AREA (removed)
OLD PLANT
(CPC) LANDFILL
(closed)
RIVER RD.
CPC PLANT AREA
(decommissioned)
TCAN HYDROLYZER
(clean closed)
HAZARDOUS WASTE DRUM
(FLAMMABLE) STORAGE PAD
(clean closed)
Olin also
owns property
on west side
of Hwy. 43
HWY 43
OLIN CORPORATION
PROPERTY LINE
LEGEND
0 500 1000 1500
REVISION
DATE
RI/FS
McINTOSH PLANT SITE
WOODWARD CLYDE CONSULTANTS
Consulting Engineers, Geologists
and Environmental Scientists
Baton Rouge, Louisiana
CHEMICAL CORPORATION
CHARLESTON, TENNESSEE

3 8 1064




| | | | | |
|---|---|---|---|---|
| OLIN CHEMICAL CORPORATION<br>McINTOSH PLANT SITE<br>CHARLESTON, TENNESSEE | **Woodward-Clyde Consultants**<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | RIVER STAGE<br>ELEVATION GRAPH<br>JAN. 1986 thru MARCH 1992 | FILE NO.<br>91B449C | FIG. NO.<br>3 |
| SCALE: NOTED | DRAWN BY: J.T.<br>CHKD. BY: M.J.S | DATE: 4/92<br>DATE: 4-15-92 | | |




38 1065

LEGEND

CONTOUR INTERVAL EVERY ONE FOOT

CONTOUR INTERVALS ON MAP READ AS DEPTH BELOW BASIN WATER LEVEL

A BASIN WATER LEVEL OF 1.56 MSL OBTAINED ON JULY 24, 1991 IS USED AS REFERENCE LEVEL

| DATE | REVISION | DRWN. CHK'D |
|---|---|---|
| | | |

RI/FS
McINTOSH PLANT

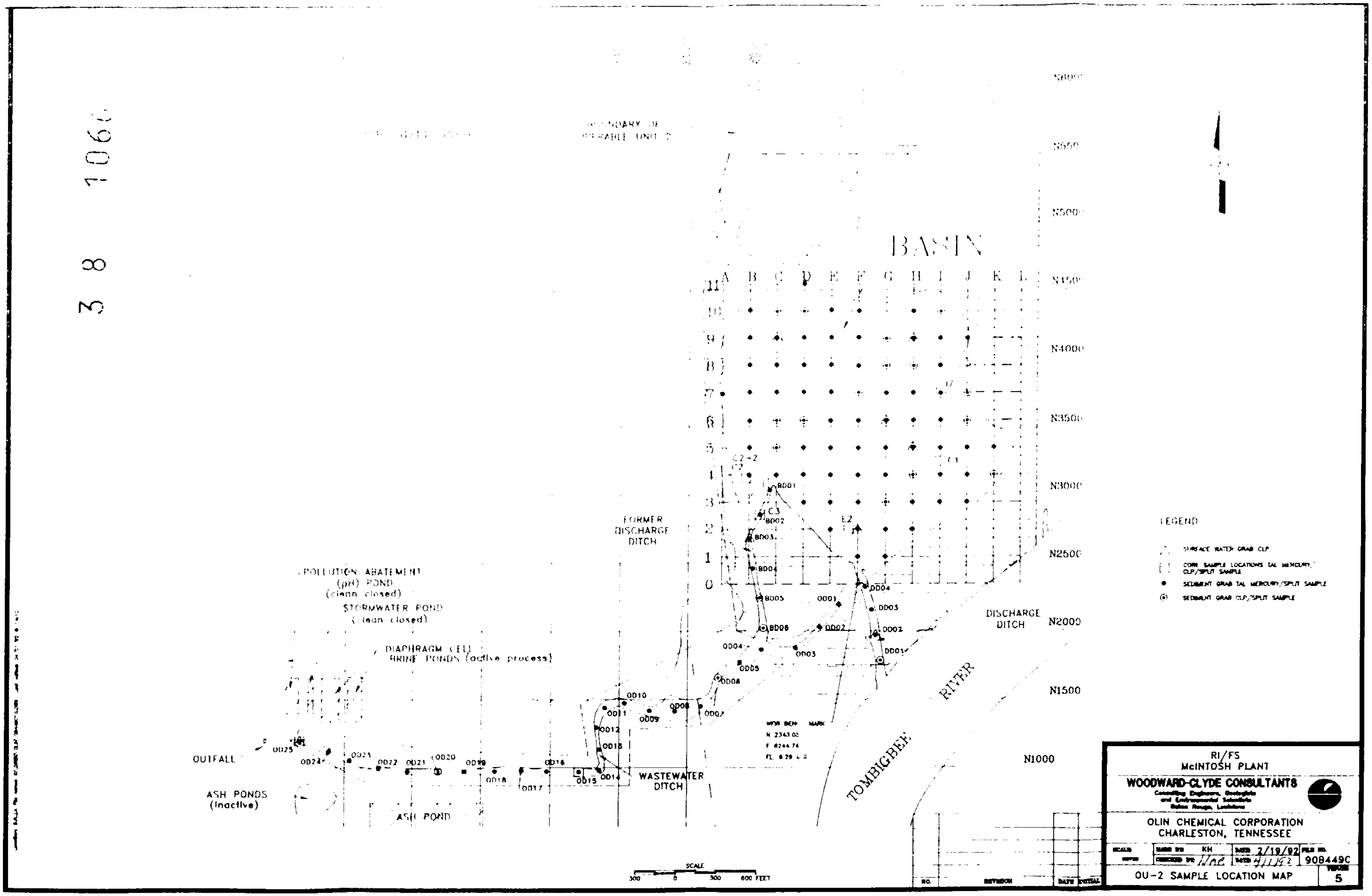
Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana

OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE

| SCALE: | MADE BY: FY | DATE: 4/9/92 | FILE NO. |
|---|---|---|---|
| AS SHOWN | CHECKED BY: DKG | DATE: 4/15/92 | 90B449C |

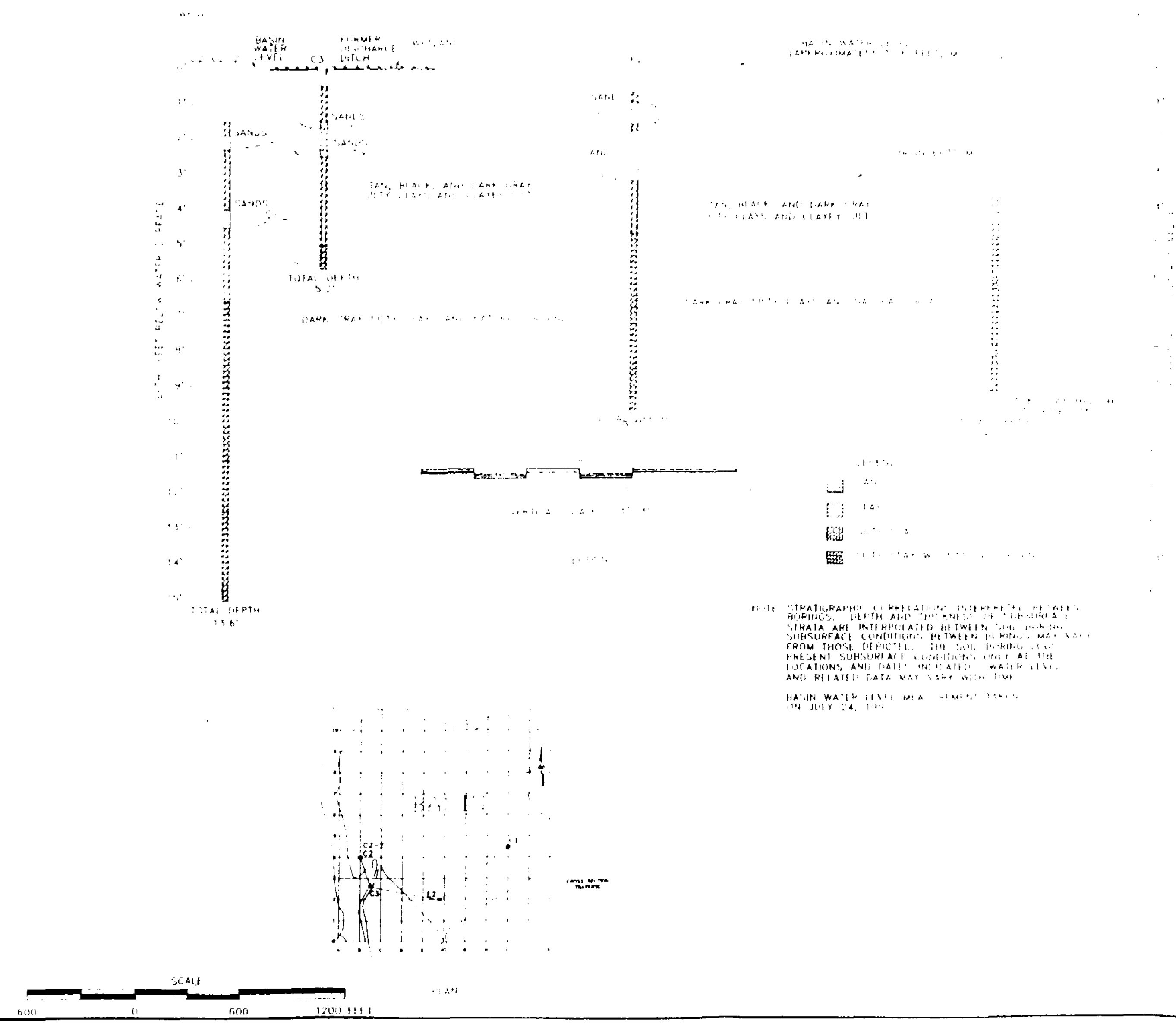
BASIN BATHYMETRIC CONTOUR MAP

FIGURE 4



BASIN
FORMER DISCHARGE DITCH
POLLUTION ABATEMENT (pH) POND (clean closed)
STORMWATER POND (clean closed)
DIAPHRAGM CELL BRINE PONDS (active process)
OUTFALL
ASH PONDS (Inactive)
ASH POND
WASTEWATER DITCH
DISCHARGE DITCH
TOMBIGBEE RIVER
N4000
N3500
N3000
N2500
N2000
N1500
N1000
LEGEND
SURFACE WATER GRAB CLP
CORE SAMPLE LOCATIONS TAL MERCURY/CLP/SPLIT SAMPLE
SEDIMENT GRAB TAL MERCURY/SPLIT SAMPLE
SEDIMENT GRAB CLP/SPLIT SAMPLE
SCALE
300 0 300 600 FEET
RI/FS
McINTOSH PLANT
WOODWARD-CLYDE CONSULTANTS
OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE
KH
2/19/92
90B449C
OU-2 SAMPLE LOCATION MAP
5


38 1066

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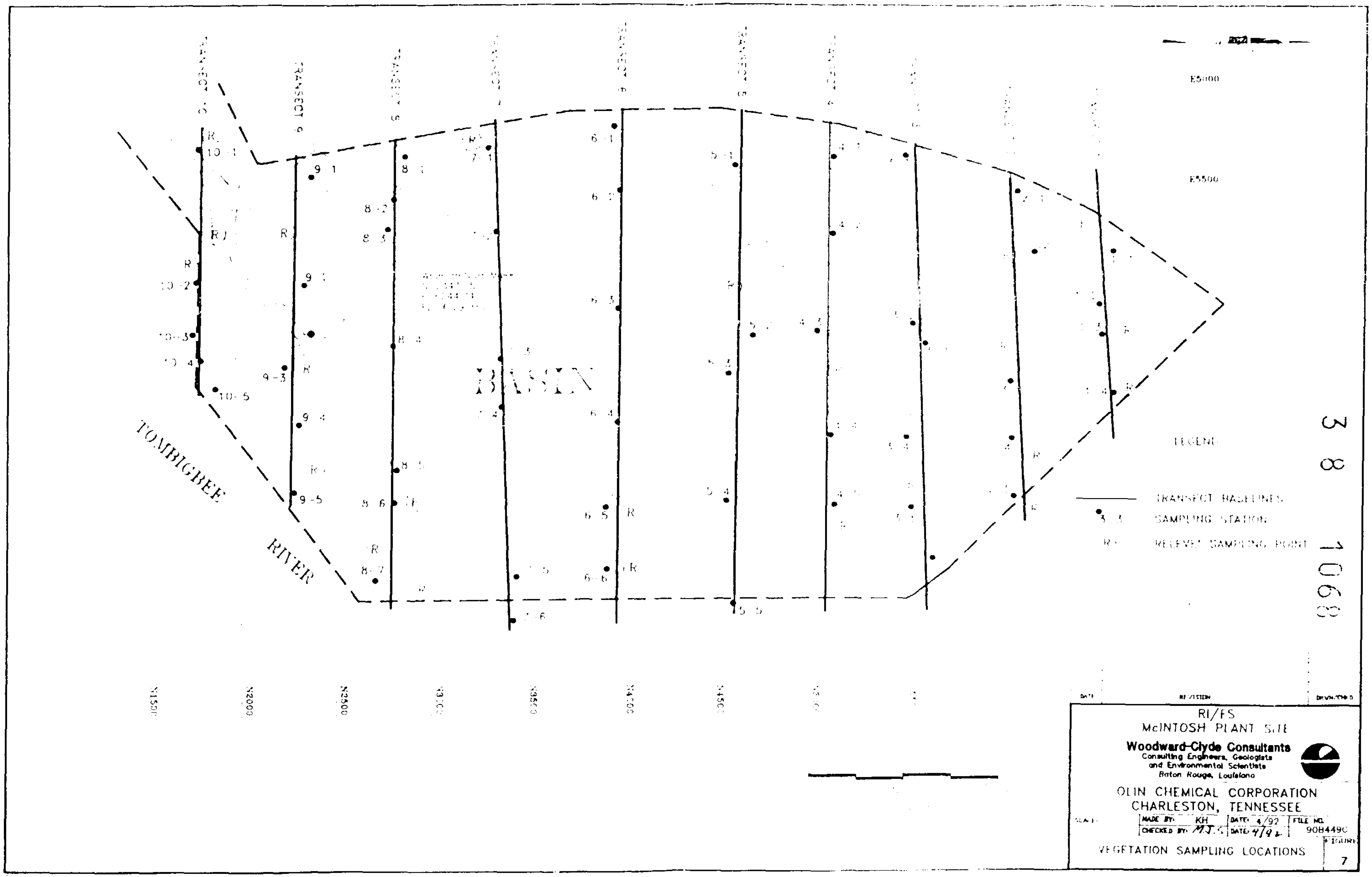
OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE

| | | | |
|---|---|---|---|
| NOTED | MADE BY: J. BICKFORD | DATE: 1/7/92 | FILE NO. 90B449C |
| | CHECKED BY: MJS | DATE: 7-14-92 | |

EAST WEST GEOLOGIC CROSS SECTION
OLIN BASIN

FIGURE 6

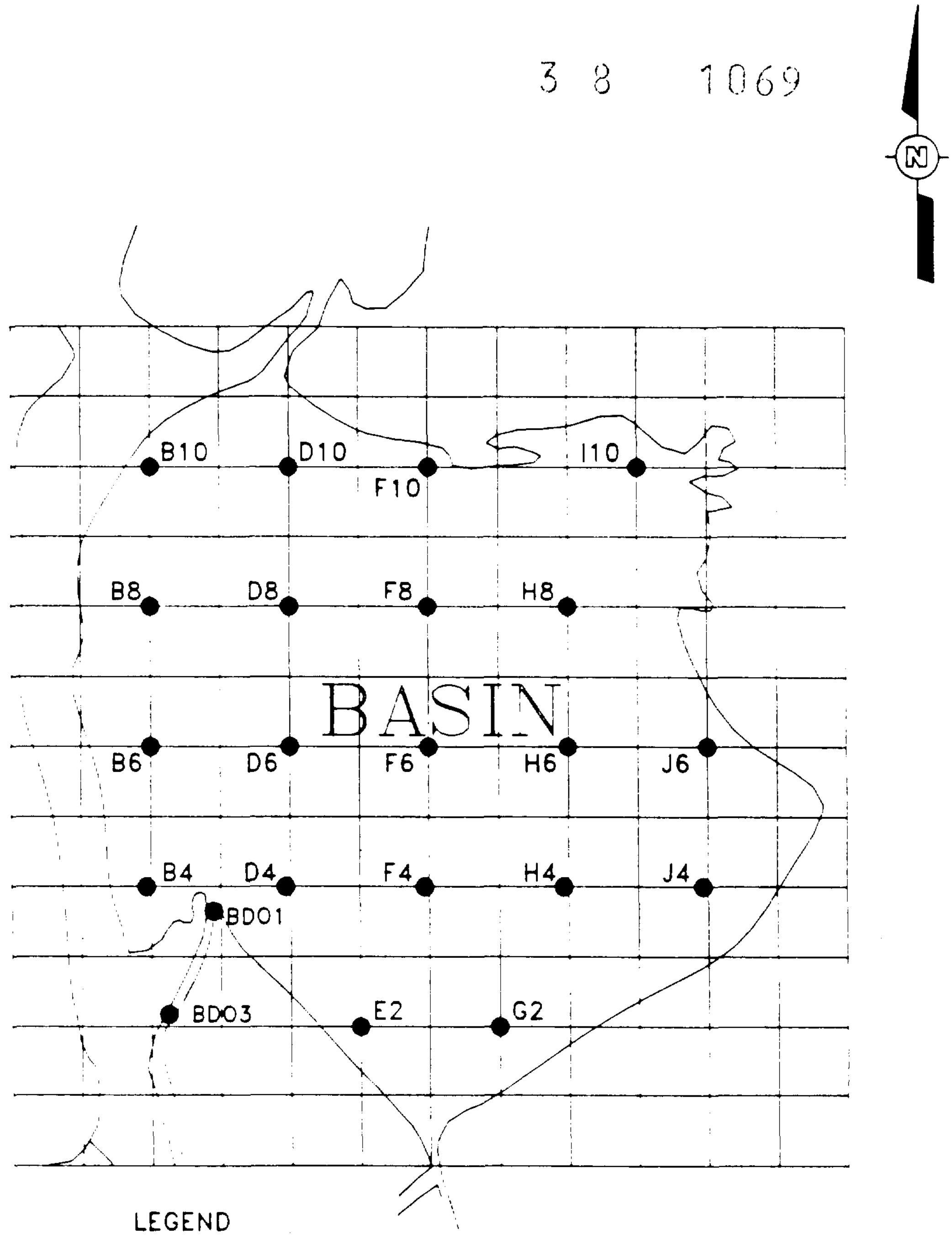
38 1067



TOMBIGBEE
RIVER
BASIN
LEGEND
TRANSECT BASELINES
SAMPLING STATION
RELEVE' SAMPLING POINT
E5000
E5500
N1500
N2000
N2500
RI/FS
McINTOSH PLANT SITE
Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana
OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE
MADE BY: KH
DATE: 4/92
CHECKED BY: M.J.S.
FILE NO. 90B449C
VEGETATION SAMPLING LOCATIONS
FIGURE 7


38 1068

3 8 1069




LEGEND

● – MACROINVERTEBRATE SAMPLE LOCATION

SCALE

500 0 500 1000 FEET

NOTE: LOCATIONS ARE APPROXIMATE.

Location: BR,LA File name: K:\DRWG\OLIN\0B449C5.DWG Last edited: 04/12/92 @ 21:07

| | | | | |
|---|---|---|---|---|
| RI/FS McINTOSH PLANT SITE<br>OLIN CHEMICAL CORP.<br>CHARLESTON, TENNESSEE | **Woodward-Clyde Consultants**<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | | MACROINVERTEBRATE SAMPLE LOCATIONS | FILE NO<br>90B449C |
| | SCALE AS SHOWN | DRAWN BY: J. BICKFORD DATE: 8/27/91<br>CHKD BY: M.J.S DATE: 4-15-92 | | FIG. NO<br>8 |


| DATE | REVISION | DRWN/CHKD |
|---|---|---|

RI/FS
McINTOSH PLANT SITE

**Woodward-Clyde Consultants**
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana

OLIN CHEMICAL CORPORATION
CHARLESTON, TENNESSEE

| SCALE: NOTED | MADE BY: KH | DATE: 4/92 | FILE NO. 90B449C |
|---|---|---|---|
| | CHECKED BY: MJS | DATE: 4/92 | |

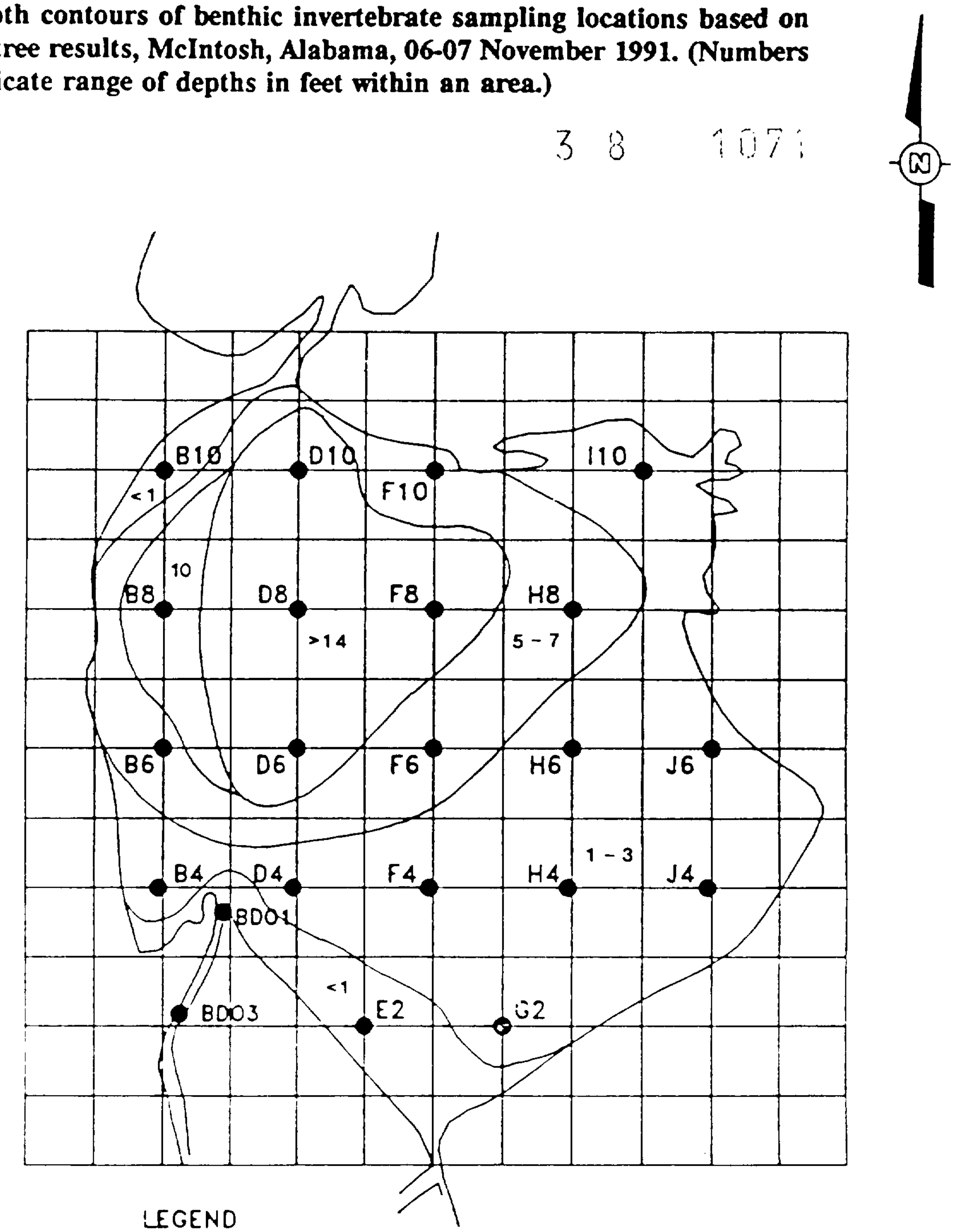
VEGETATION AND LAND COVER TYPES IN OU-2

FIGURE 9

Location: B.R.,LA File name: K:\DRWG\OLIN\449C5.DWG Last edited: 04/1?/92 @ 14:2?

**Depth contours of benthic invertebrate sampling locations based on Sigtree results, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of depths in feet within an area.)**

3 8 1071




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

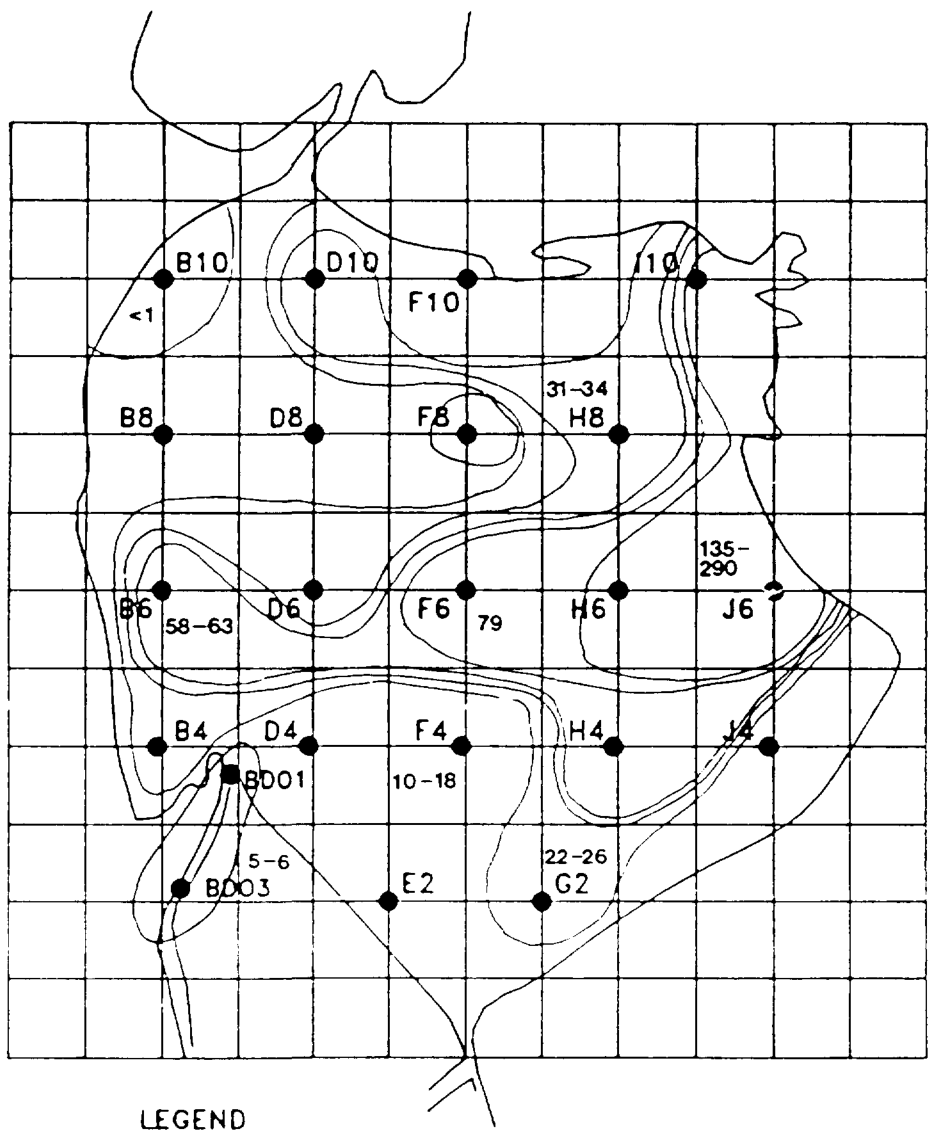
SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | DEPTH CONTOURS OF BENTHIC INVERTEBRATE SAMPLE LOCATIONS | FILE NO. 90B449C<br>FIG. NO. 10 |
| SCALE | DRAWN BY J. BICKFORD | DATE 8/27/91 | |

**Distribution of mercury in sediments based on Sigtree results, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of mercury concentrations in mg/kg within an area.)**

N




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

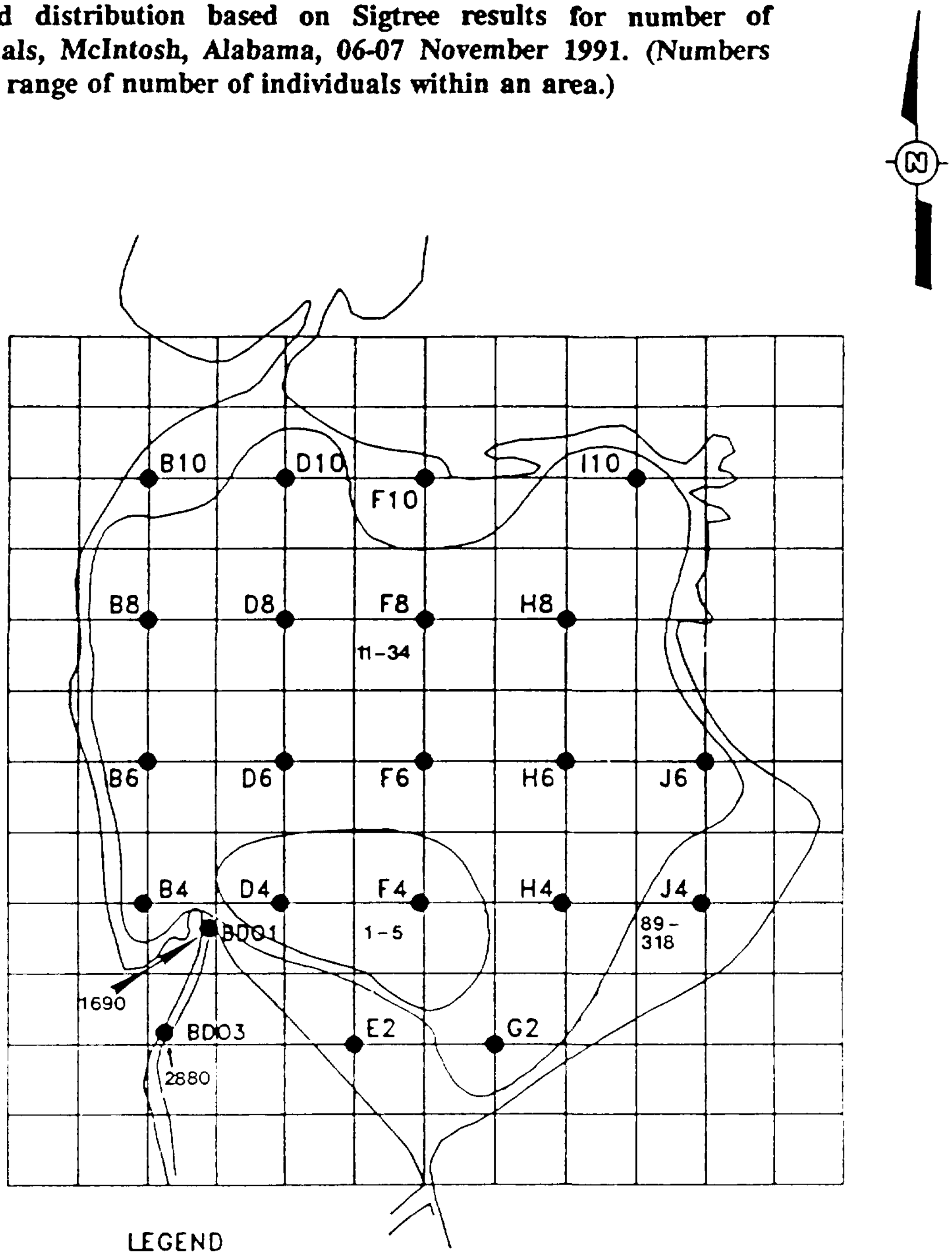
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana<br>SCALE AS SHOWN · DRAWN BY J. BICKFORD · DATE 8/27/91 | DISTRIBUTION OF MERCURY IN SEDIMENTS BASED ON RESULTS FROM BENTHIC INVERTEBRATE SAMPLE LOCATIONS | FILE NO. 90B449C<br>FIG. NO. 11 |

**Ostracod distribution based on Sigtree results for number of individuals, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of number of individuals within an area.)**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

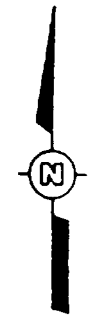
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

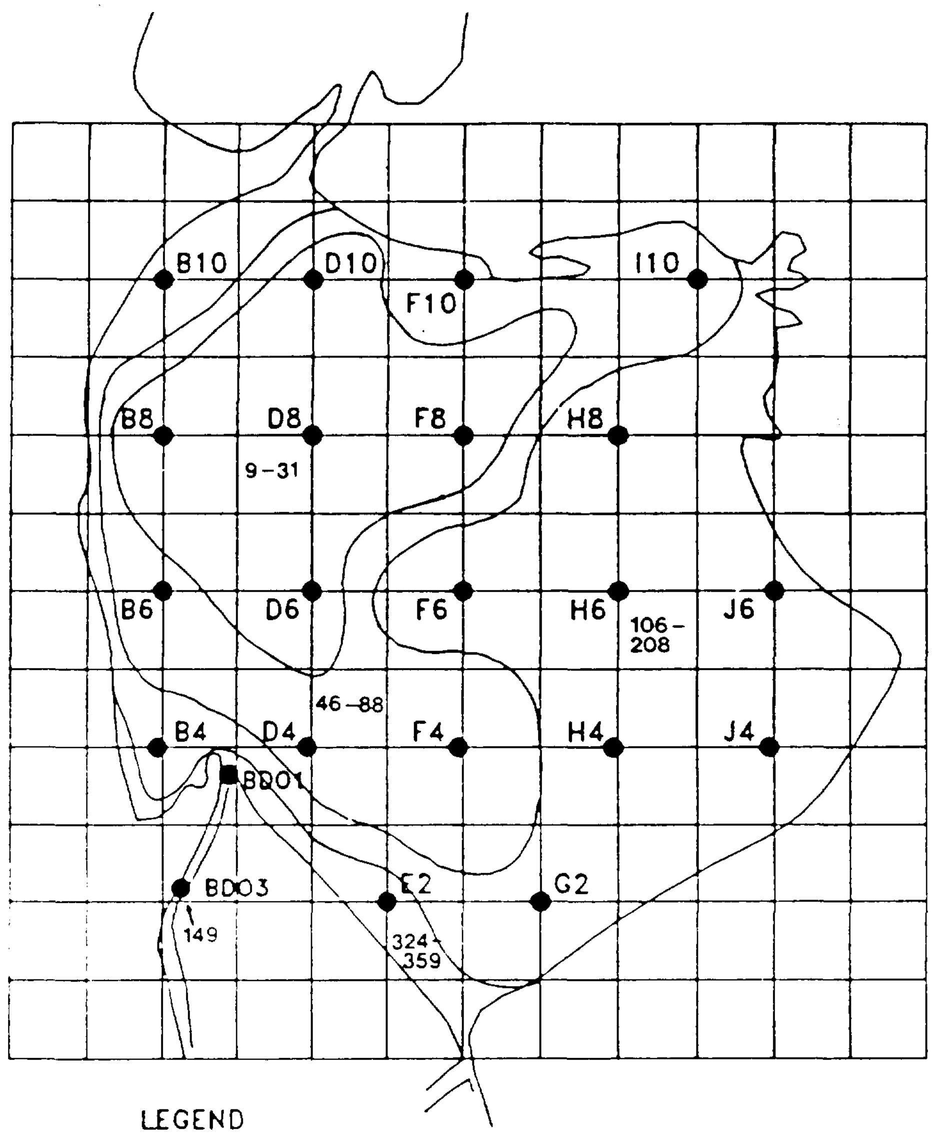
SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| R/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | | FILE NO. 90B449C<br>FIG. NO. 12 |

**Distribution of numbers of oligochaetes, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of number of individuals within an area.)**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF NUMBERS OF OLIGOCHAETES IDENTIFIED IN THE SAMPLES

SCALE

500 0 500 1000 FEET

RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana

OLIGOCHAETE DISTRIBUTION WITHIN OLIN BASIN

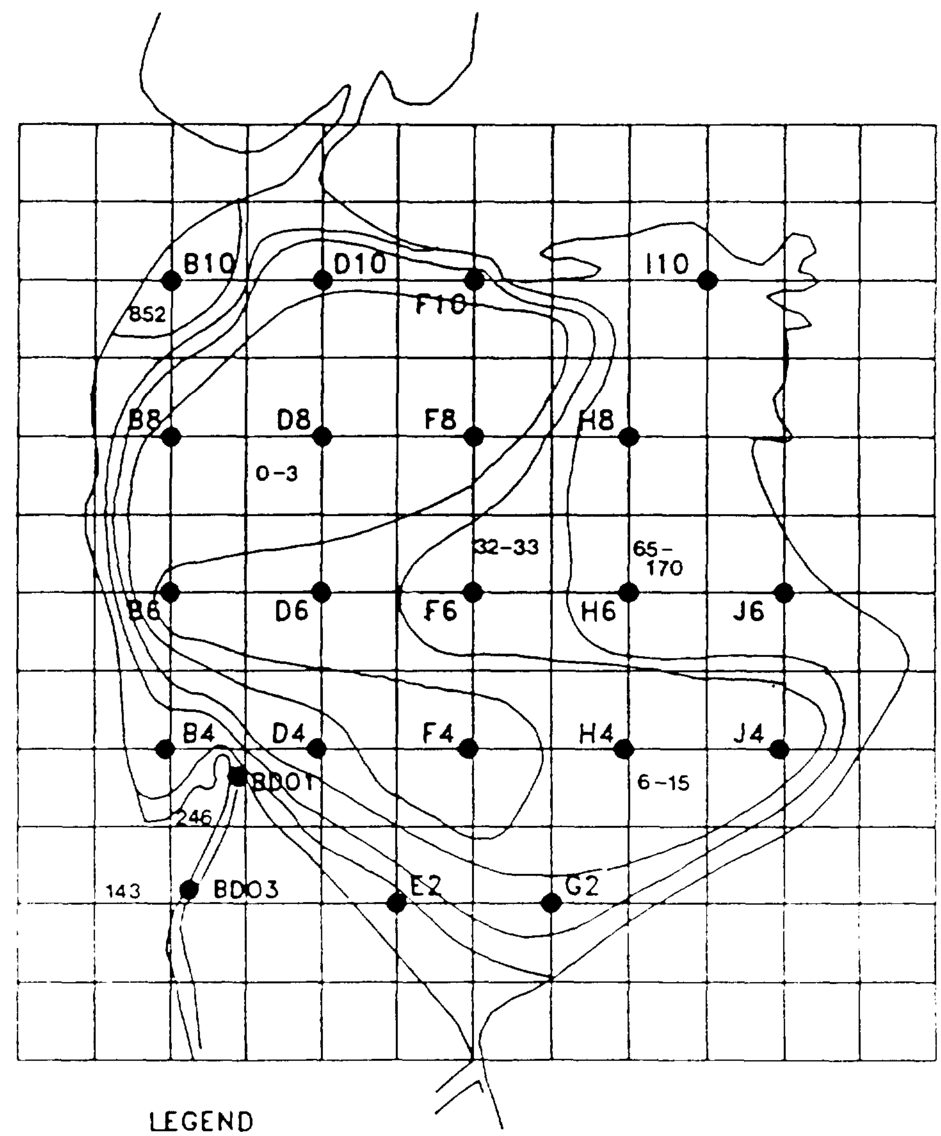
FILE NO 90B449C

FIG. NO 13

DATE 8/27/91

**Distribution of numbers of chironomid larvae, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of number of individuals within an area.)**

N




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF NUMBERS OF CHIRONOMID LARVAE IDENTIFIED IN THE SAMPLES

SCALE

500 0 500 1000 FEET

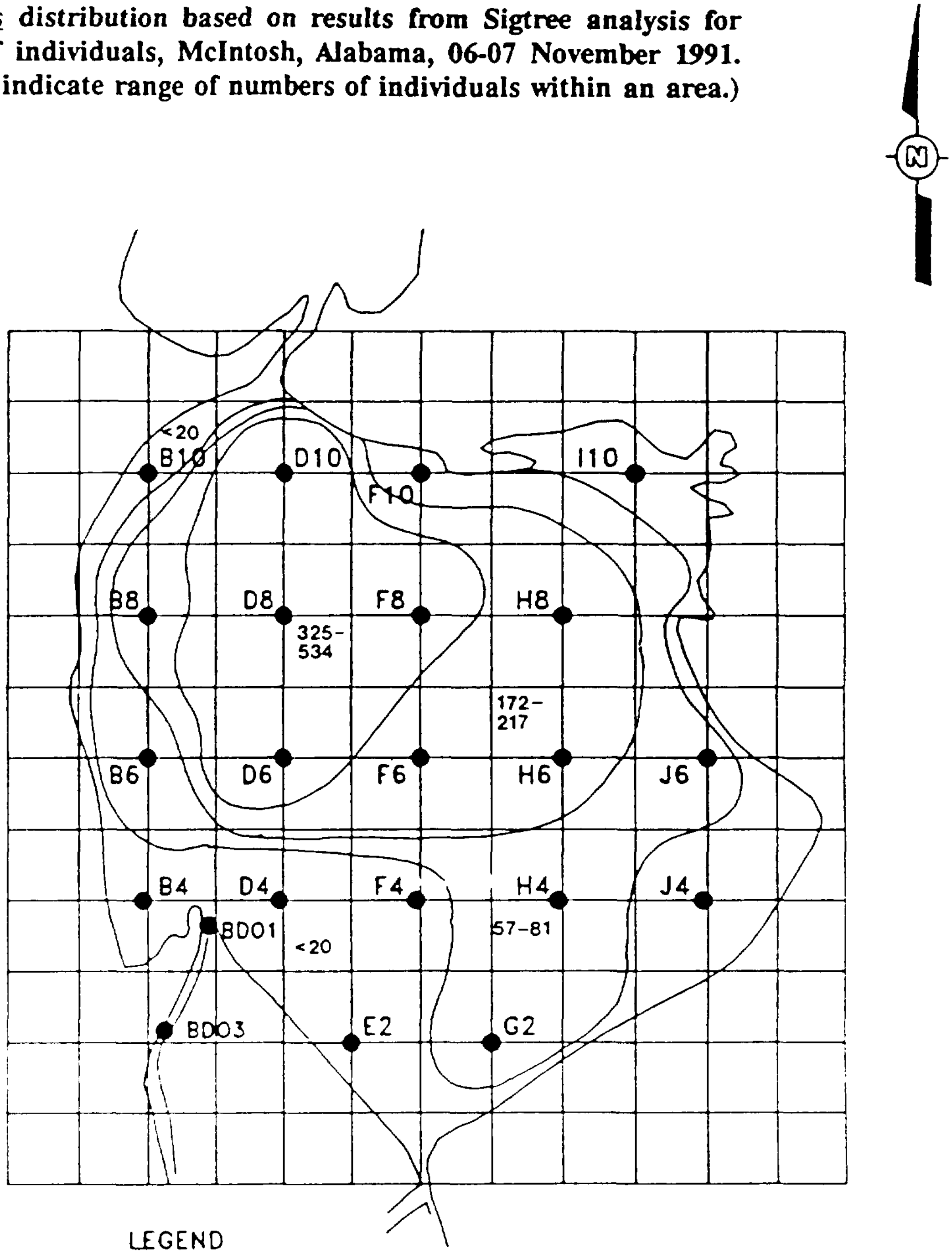
RI/FS McINTOSH PLANT SITE
OLIN CHEMICAL CORP.
CHARLESTON, TENNESSEE

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
Baton Rouge, Louisiana

CHIRONOMID LARVAE
DISTRIBUTION ...

FILE NO 90B449C
FIG. NO 14

**Chaoborus distribution based on results from Sigtree analysis for number of individuals, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of numbers of individuals within an area.)**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

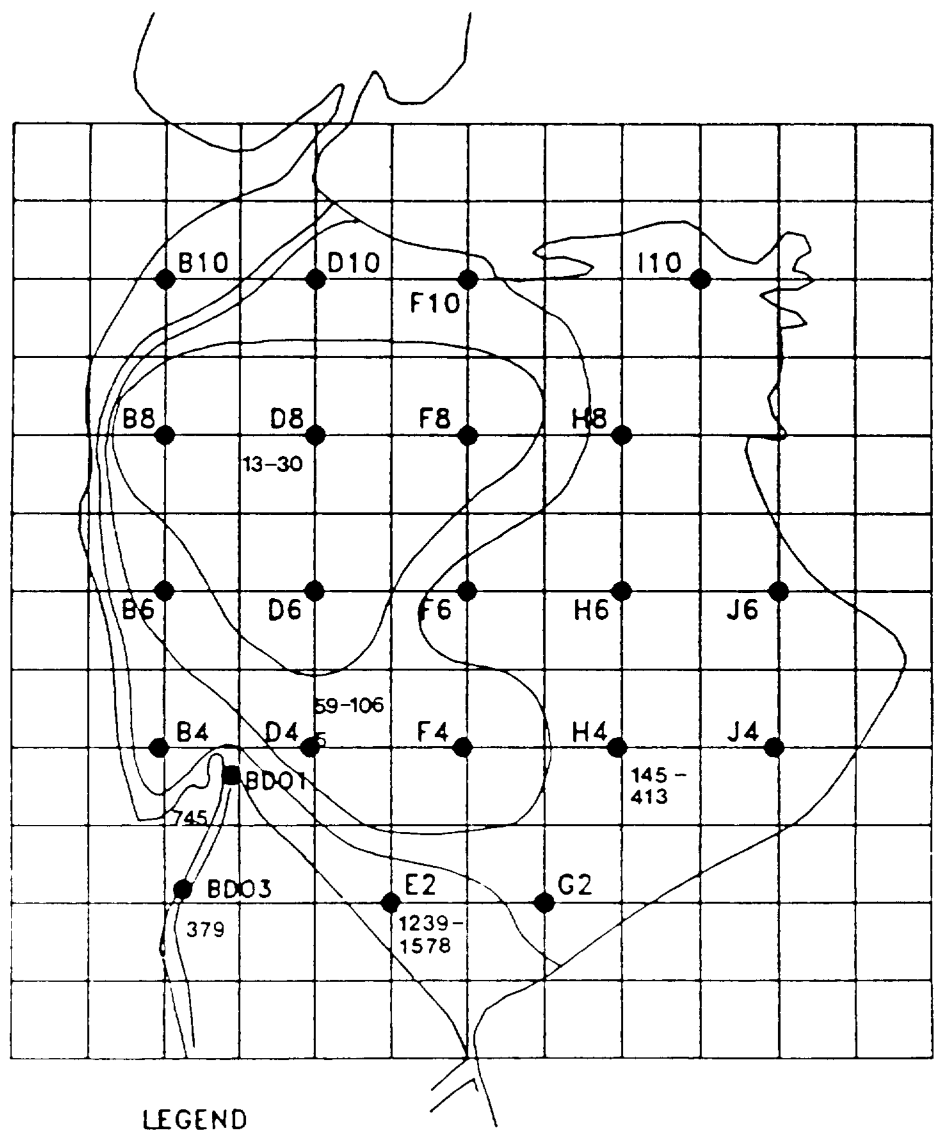
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana<br>DATE 8/27/91 | | FILE NO 90B449C<br>FIG. NO 15 |

**Distribution of numbers of individuals, excluding ostracods and Chaoborus, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate range of number of individuals within an area.)**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

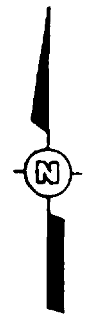
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF NUMBERS OF INDIVIDUALS (EXCLUDING OSTRACODS AND CHAOBORUS).

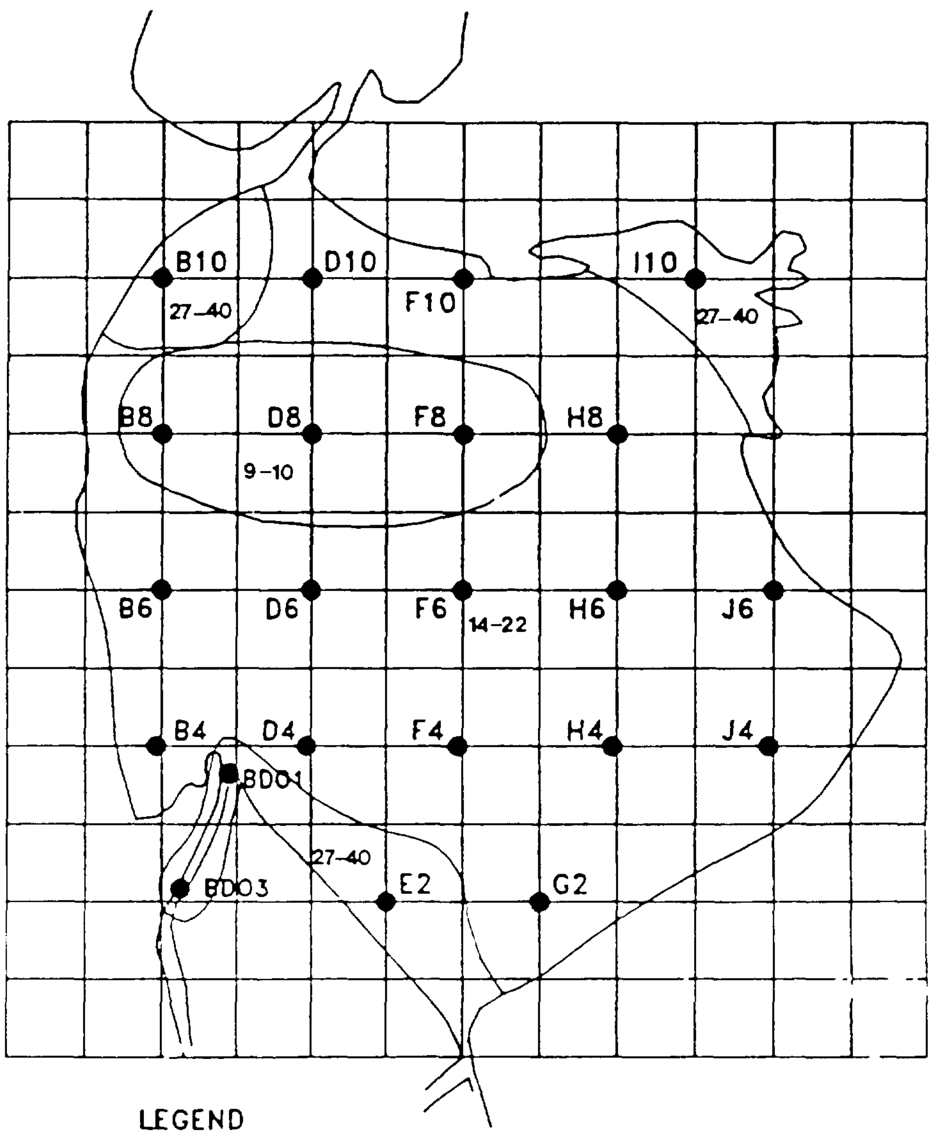
SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | **Woodward-Clyde Consultants** Consulting Engineers, Geologists and Environmental Scientists Baton Rouge, Louisiana | [illegible] | FILE NO 90B449C FIG. NO 16 |

**Distribution of numbers of taxa, McIntosh, Alabama, 06-07 November 1991. (Numbers indicate the range of number of taxa within an area.)**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

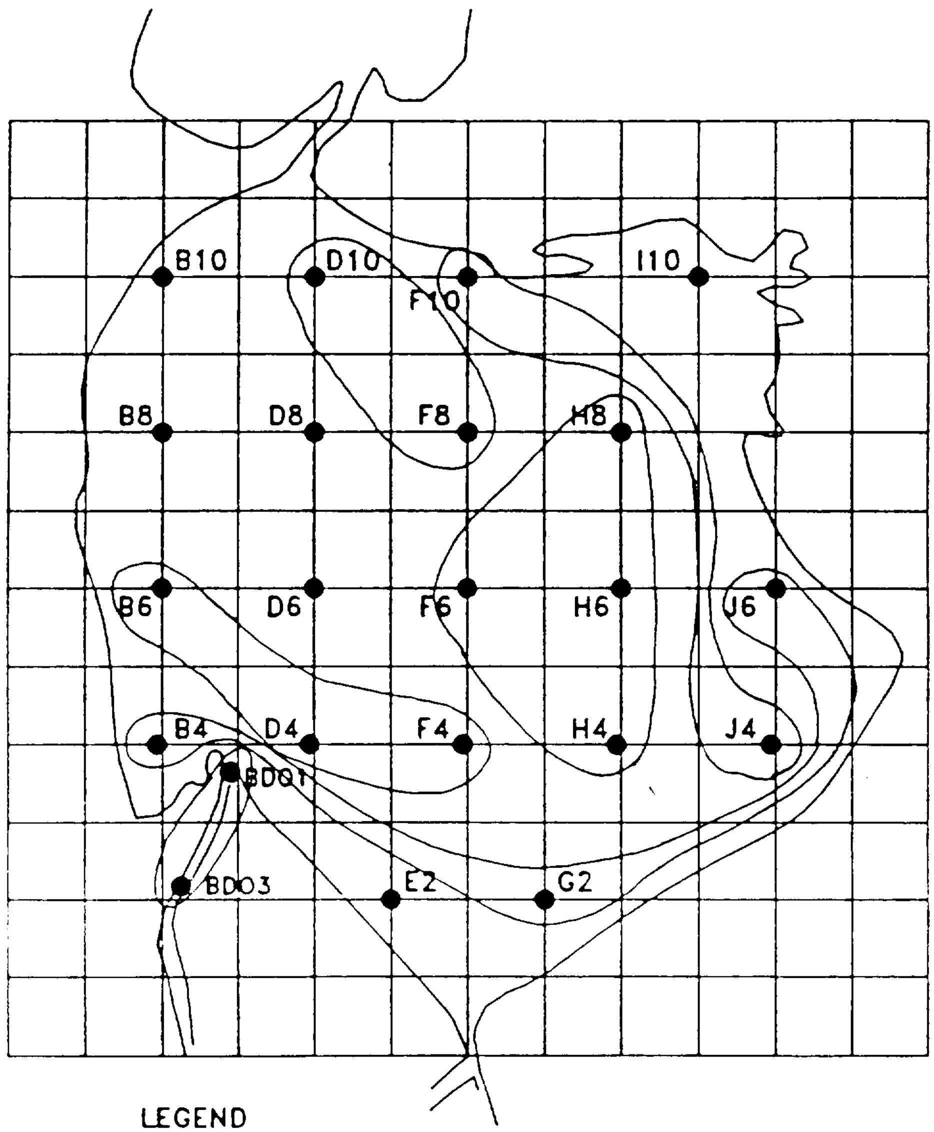
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF RANGES OF NUMBERS OF TAXA IDENTIFIED IN THE SAMPLES

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | | FILE NO 90E449C<br>FIG NO 17 |

**Six clusters of sites based on Sigtree results for benthic invertebrate data matrix. The benthos at each site within a cluster is similar, but is different to the benthos at other sites and in other clusters.**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

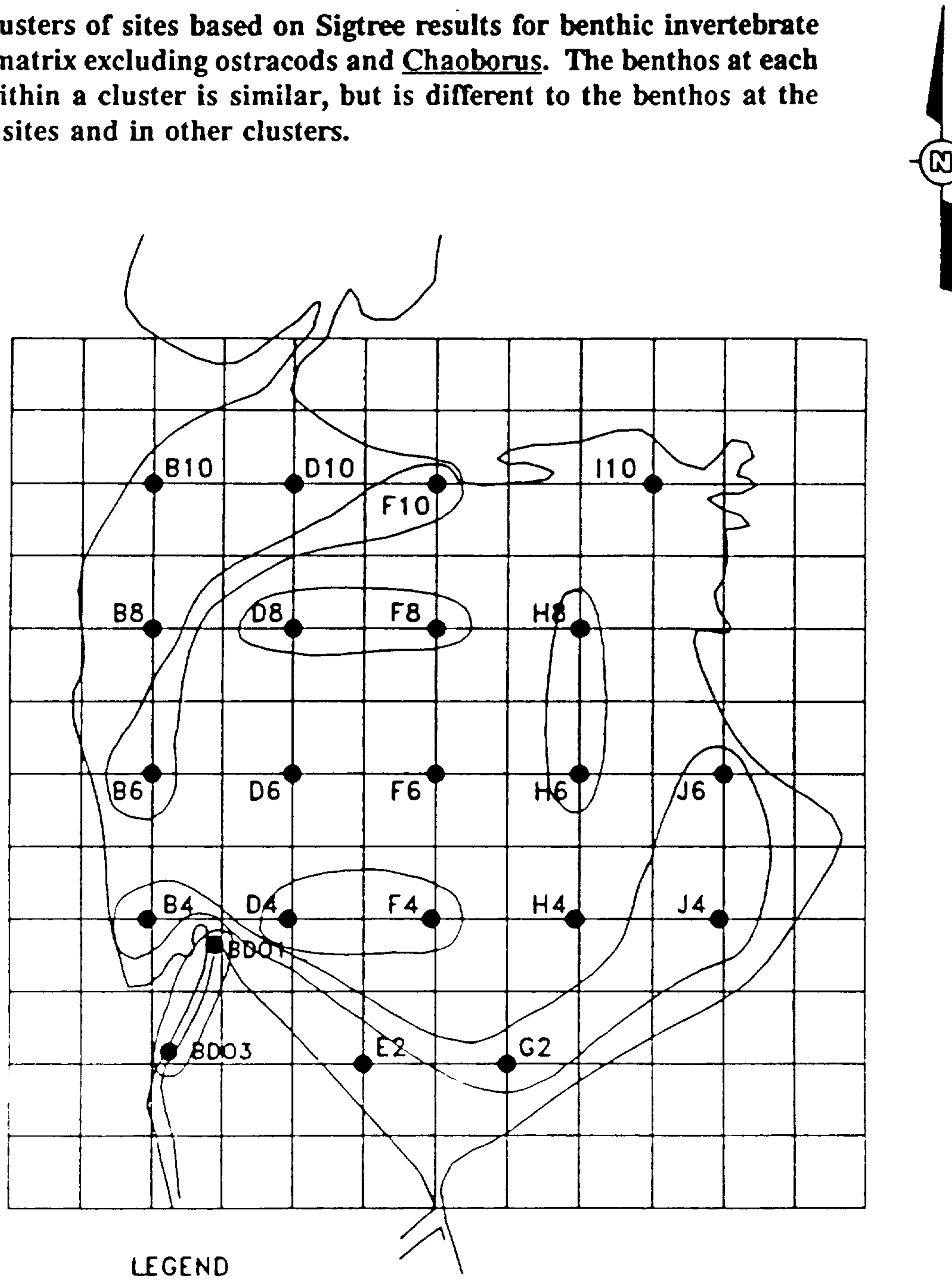
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RIVERS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | INVERTEBRATE BENTHOS CLUSTERS WITH ... | FILE NO<br>90B449C<br>FIG. NO |

**Six clusters of sites based on Sigtree results for benthic invertebrate data matrix excluding ostracods and Chaoborus. The benthos at each site within a cluster is similar, but is different to the benthos at the other sites and in other clusters.**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

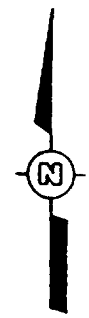
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

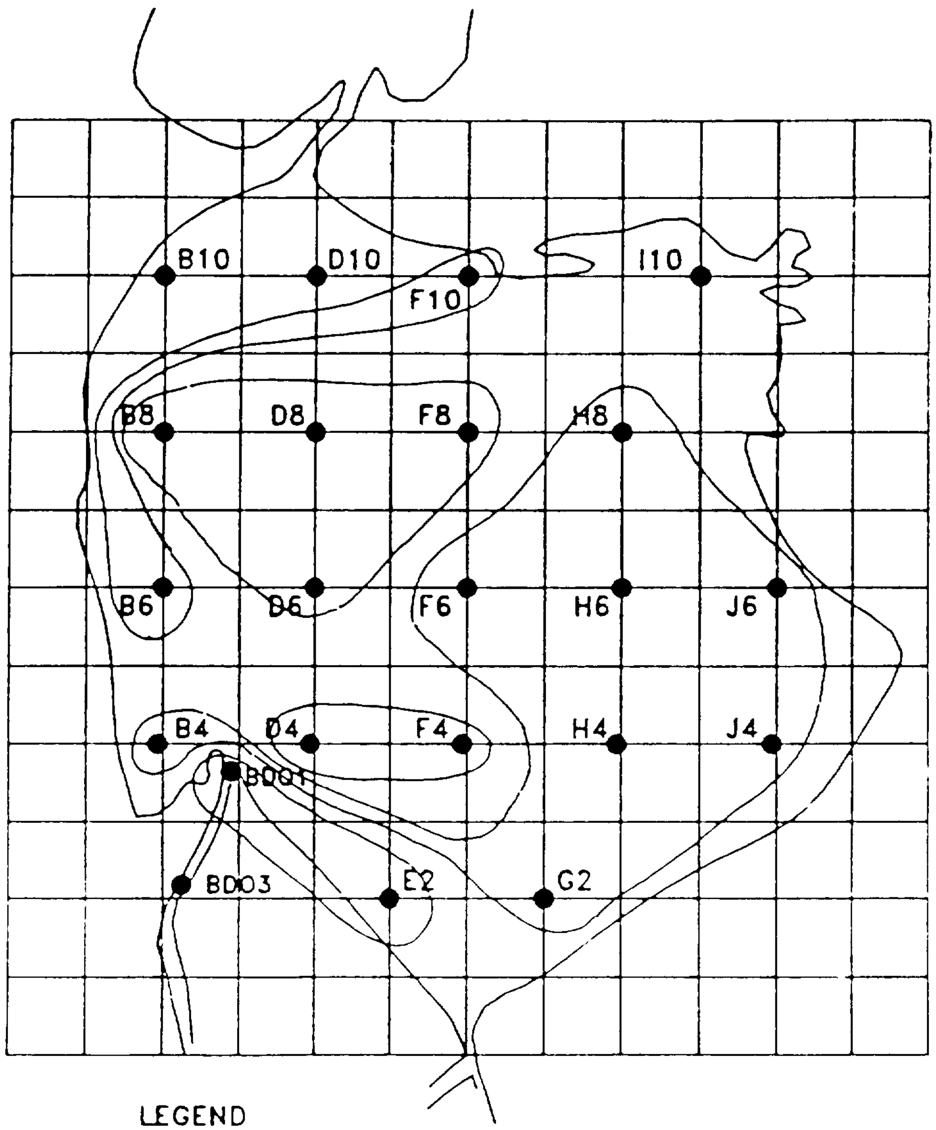
SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RUFS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | INVERTEBRATE BENTHOS CLUSTERS WITHIN [illegible] BASIN, EXCLUDING OSTRACODS AND CHAOBORUS | FILE NO 90B449C |
| | SCALE / DRAWN BY J. [illegible] / DATE 8/27/91 | | FIG. NO. 19 |

**Five clusters of sites based on Sigtree results for oligochaete data matrix. The oligochaete community at each site within a cluster is similar, but is different to other oligochaete communities at other sites and in other clusters.**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

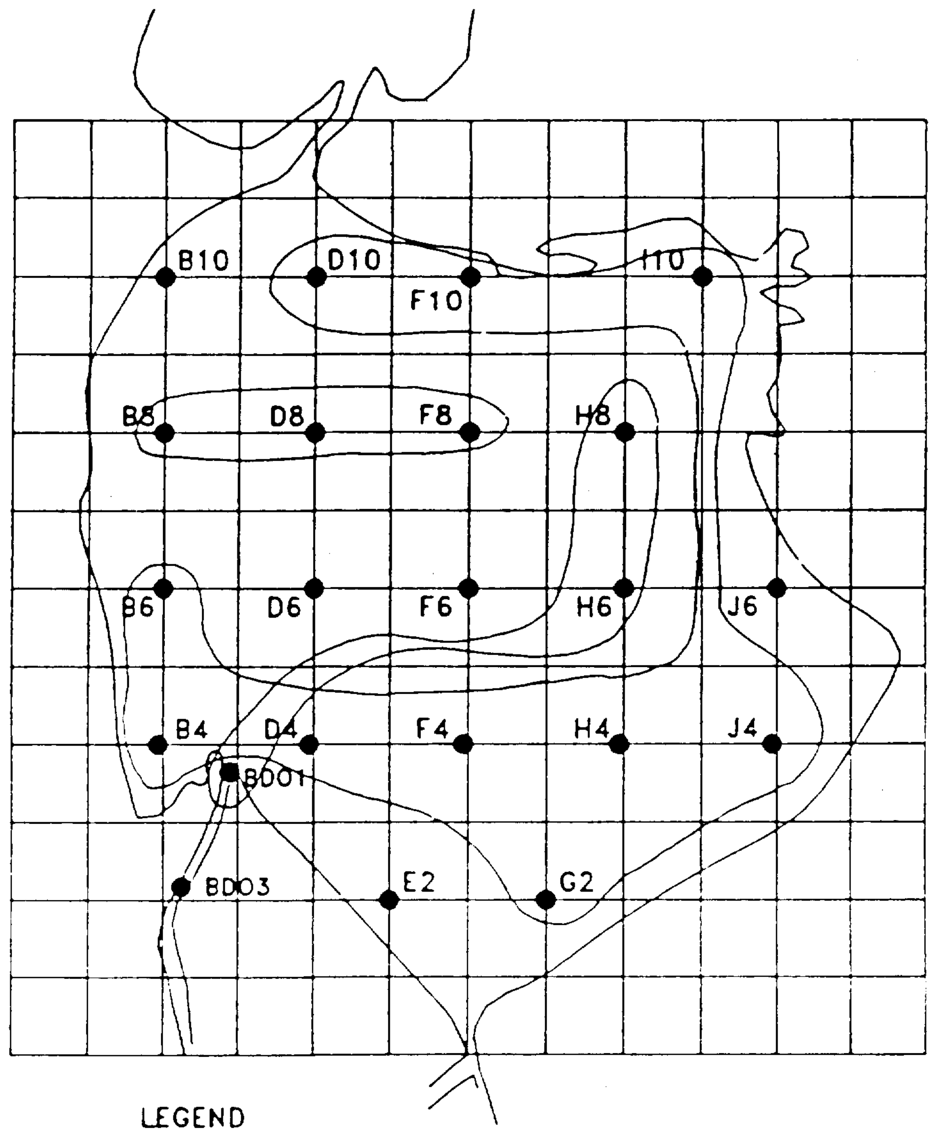
2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RI/FS McINTOSH PLANT SITE OLIN CHEMICAL CORP. CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | | FILE NO. 90B449C |
| | SCALE / DRAWN BY J. BICKFORD / DATE 8/27/91 | | FIG. NO. 20 |

**Three clusters of sites based on Sigtree results for chironomid larvae data matrix. The chironomid community at each site within a cluster is similar, but is different to other chironomid communities at other sites and in other clusters.**




LEGEND

● – BENTHIC INVERTEBRATE SAMPLE LOCATION

NOTES: 1. LOCATIONS ARE APPROXIMATE.

2. THE LINES DEPICT A GRAPHICAL REPRESENTATION OF GROUPS OF STATIONS BASED ON SIGTREE RESULTS.

SCALE

500 0 500 1000 FEET

| | | | |
|---|---|---|---|
| RUFFS McINTOSH PLANT SITE<br>OLIN CHEMICAL CORP.<br>CHARLESTON, TENNESSEE | Woodward-Clyde Consultants<br>Consulting Engineers, Geologists and Environmental Scientists<br>Baton Rouge, Louisiana | | FILE NO<br>908449C |
| | SCALE | DRAWN BY: J. BICKFORD | DATE 8/27/91 | FIG. NO<br>21 |

# APPENDIX A

3 8 1083

# APPENDIX A

# SUMMARY OF ANALYTICAL DATA

# SEDIMENT DATA

# SUMMARY TABLES

CLP VOLATILE SEDIMENT RESULTS
ALL UNITS ARE UG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|
| SCC102 | CHLOROBENZENE | 140 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | BENZENE | 40 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | CHLOROBENZENE | 2500 | | 8/23/91 | SED CORE | BASIN |
| SCC204 | BENZENE | 180 | | 8/23/91 | SED CORE | BASIN |
| SCC204 | CHLOROBENZENE | 5800 | | 8/23/91 | SED CORE | BASIN |
| SCC206 | BENZENE | 5 | J | 11/13/91 | SED CORE | BASIN |
| SCC206 | CHLOROBENZENE | 160 | | 11/13/91 | SED CORE | BASIN |
| SCC206DUP | BENZENE | 4 | J | 11/13/91 | SED CORE | BASIN |
| SCC206DUP | CHLOROBENZENE | 48 | | 11/13/91 | SED CORE | BASIN |
| SCE204 | CHLOROBENZENE | 12000 | | 11/14/91 | SED CORE | BASIN |
| SCE205 | BENZENE | 10 | J | 11/14/91 | SED CORE | BASIN |
| SCE205 | CHLOROBENZENE | 570 | | 11/14/91 | SED CORE | BASIN |
| SCI704 | CHLOROBENZENE | 13 | J | 11/13/91 | SED CORE | BASIN |
| SGC05 | CHLOROBENZENE | 460 | | 8/13/91 | SED GRAB | BASIN |
| SGC06 | CHLOROBENZENE | 380 | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | CHLOROBENZENE | 400 | | 8/11/91 | SED GRAB | BASIN |
| SGC10 | CHLOROBENZENE | 48 | | 8/08/91 | SED GRAB | BASIN |
| SGD06 | CHLOROBENZENE | 650 | | 8/11/91 | SED GRAB | BASIN |
| SGD10 | CHLOROBENZENE | 45 | J | 8/08/91 | SED GRAB | BASIN |
| SGF07 | CHLOROBENZENE | 70 | | 8/11/91 | SED GRAB | BASIN |
| SGG03 | CHLOROBENZENE | 1000 | | 8/13/91 | SED GRAB | BASIN |
| SGG08 | CHLOROBENZENE | 12 | J | 8/11/91 | SED GRAB | BASIN |
| SGG09 | CHLOROBENZENE | 39 | J | 8/09/91 | SED GRAB | BASIN |
| SGH04 | CHLOROBENZENE | 100 | | 8/13/91 | SED GRAB | BASIN |
| SGH08 | CHLOROBENZENE | 14 | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | CHLOROBENZENE | 21 | J | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | CHLOROBENZENE | 10 | J | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | CHLOROBENZENE | 12 | J | 8/11/91 | SED GRAB | BASIN |
| SGK04 | CHLOROBENZENE | 9 | J | 8/13/91 | SED GRAB | BASIN |
| SCOD152 | BENZENE | 700 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | CHLOROBENZENE | 51000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | BENZENE | 2100 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | CHLOROBENZENE | 62000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SGOD06 | CHLOROBENZENE | 74 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | CHLOROBENZENE | 3 | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGDD01 | CHLOROBENZENE | 23 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC302 | CHLOROBENZENE | 350 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | BENZENE | 30 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | CHLOROBENZENE | 480 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SGBD05 | CHLOROBENZENE | 42 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | CHLOROBENZENE | 46 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN.

FILE: \PRDTN\SD\SUMVO

CLP SEMIVOLATILE SEDIMENT RESULTS
ALL UNITS ARE UG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|
| SCC102 | 1,4-DICHLOROBENZENE | 490 | J | 8/23/91 | SED CORE | BASIN |
| SCE201 | 1,4-DICHLOROBENZENE | 3700 | J | 11/14/91 | SED CORE | BASIN |
| SCE201 | HEXACHLOROBENZENE | 250000 | | 11/14/91 | SED CORE | BASIN |
| SCE202 | 1,2,4-TRICHLOROBENZENE | 140 | J | 11/14/91 | SED CORE | BASIN |
| SCE202 | 1,2-DICHLOROBENZENE | 700 | | 11/14/91 | SED CORE | BASIN |
| SCE202 | 1,3-DICHLOROBENZENE | 500 | | 11/14/91 | SED CORE | BASIN |
| SCE202 | 1,4-DICHLOROBENZENE | 3300 | | 11/14/91 | SED CORE | BASIN |
| SCE202 | HEXACHLOROBENZENE | 72000 | J | 11/14/91 | SED CORE | BASIN |
| SCE203 | HEXACHLOROBENZENE | 70000 | | 11/14/91 | SED CORE | BASIN |
| SCE204 | 1,2-DICHLOROBENZENE | 310 | J | 11/14/91 | SED CORE | BASIN |
| SCE204 | 1,3-DICHLOROBENZENE | 1600 | | 11/14/91 | SED CORE | BASIN |
| SCE204 | 1,4-DICHLOROBENZENE | 4100 | | 11/14/91 | SED CORE | BASIN |
| SCE204 | 2,4-DICHLOROPHENOL | 440 | J | 11/14/91 | SED CORE | BASIN |
| SCE204 | HEXACHLOROBENZENE | 2000 | | 11/14/91 | SED CORE | BASIN |
| SCE204 | NAPHTHALENE | 240 | J | 11/14/91 | SED CORE | BASIN |
| SCI701 | 1,4-DICHLOROBENZENE | 180 | J | 11/13/91 | SED CORE | BASIN |
| SCI701 | HEXACHLOROBENZENE | 390 | J | 11/13/91 | SED CORE | BASIN |
| SCI702 | 1,4-DICHLOROBENZENE | 310 | J | 11/13/91 | SED CORE | BASIN |
| SCI703 | 1,4-DICHLOROBENZENE | 500 | J | 11/13/91 | SED CORE | BASIN |
| SCI703 | HEXACHLOROBENZENE | 340 | J | 11/13/91 | SED CORE | BASIN |
| SGC05 | 1,3-DICHLOROBENZENE | 200 | J | 8/13/91 | SED GRAB | BASIN |
| SGC05 | 1,4-DICHLOROBENZENE | 470 | | 8/13/91 | SED GRAB | BASIN |
| SGC05 | HEXACHLOROBENZENE | 20000 | | 8/13/91 | SED GRAB | BASIN |
| SGG03 | 1,3-DICHLOROBENZENE | 180 | J | 8/13/91 | SED GRAB | BASIN |
| SGG03 | 1,4-DICHLOROBENZENE | 510 | J | 8/13/91 | SED GRAB | BASIN |
| SGG03 | HEXACHLOROBENZENE | 40000 | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | HEXACHLOROBENZENE | 500 | J | 8/13/91 | SED GRAB | BASIN |
| SGI10 | 1,4-DICHLOROBENZENE | 290 | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | HEXACHLOROBENZENE | 1800 | | 8/11/91 | SED GRAB | BASIN |
| SCOD151 | 1,2,4-TRICHLOROBENZENE | 42000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD151 | 1,2-DICHLOROBENZENE | 6800 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD151 | 1,3-DICHLOROBENZENE | 9400 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD151 | 1,4-DICHLOROBENZENE | 8300 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD151 | HEXACHLOROBENZENE | 480000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | 1,2,4-TRICHLOROBENZENE | 7400 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | 1,2-DICHLOROBENZENE | 1600 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | 1,3-DICHLOROBENZENE | 16000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | 1,4-DICHLOROBENZENE | 16000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD152 | HEXACHLOROBENZENE | 130000 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | 1,2,4-TRICHLOROBENZENE | 21000 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | 1,2-DICHLOROBENZENE | 4500 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | 1,3-DICHLOROBENZENE | 7300 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | 1,4-DICHLOROBENZENE | 19000 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD153 | HEXACHLOROBENZENE | 560000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD251 | 1,2,4-TRICHLOROBENZENE | 5000 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD251 | HEXACHLOROBENZENE | 51000 | J | 11/14/91 | SED CORE | OUTFALL DITCH |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN.

FILE: \PRDTN\SD\SUMSE

CLP SEMIVOLATILE SEDIMENT RESULTS
ALL UNITS ARE UG/KG

3 8 1088

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|
| SCOD252 | 1,2,4-TRICHLOROBENZENE | 1800 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD252 | HEXACHLOROBENZENE | 45000 | J | 11/14/91 | SED CORE | OUTFALL DITCH |
| SCOD253 | HEXACHLOROBENZENE | 2300 | | 11/14/91 | SED CORE | OUTFALL DITCH |
| SGOD06 | 1,2,4-TRICHLOROBENZENE | 1100 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | 1,2-DICHLOROBENZENE | 240 | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | 1,3-DICHLOROBENZENE | 950 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | 1,4-DICHLOROBENZENE | 630 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | HEXACHLOROBENZENE | 19000 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | HEXACHLOROBENZENE | 67000 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | HEXACHLOROBENZENE | 63000 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | HEXACHLOROBENZENE | 810000 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGDD01 | 1,3-DICHLOROBENZENE | 590 | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | 1,4-DICHLOROBENZENE | 190 | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | HEXACHLOROBENZENE | 26000 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC302 | HEXACHLOROBENZENE | 2800 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SGBD05 | HEXACHLOROBENZENE | 730 | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | HEXACHLOROBENZENE | 4500 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN.

FILE: \PRDTN\SD\SUMSE

CLP PESTICIDE/PCB SEDIMENT RESULTS
ALL UNITS ARE UG/KG

3 8 1089

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|
| SCC102 | 4,4'-DDD | 70.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC102 | 4,4'-DDE | 32.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC202 | 4,4'-DDD | 130.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC202 | 4,4'-DDE | 710.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC202 | HEPTACHLOR EPOXIDE | 19.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC204 | 4,4'-DDD | 20.00 | | 8/23/91 | SEDIMENT | BASIN |
| SCC204 | 4,4'-DDE | 23.00 | | 8/23/91 | SEDIMENT | BASIN |
| SGC05 | 4,4'-DDD | 120.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC05 | 4,4'-DDE | 100.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC05 | 4,4'-DDT | 52.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC05 | ALDRIN | 28.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC05 | ENDOSULFAN I | 110.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC05 | GAMMA-BHC | 29.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGC06 | 4,4'-DDD | 760.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06 | 4,4'-DDE | 530.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06 | 4,4'-DDT | 170.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06 | BETA-BHC | 15.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06DUP | 4,4'-DDD | 890.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06DUP | 4,4'-DDE | 590.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC06DUP | 4,4'-DDT | 160.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGC10 | 4,4'-DDD | 820.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGC10 | 4,4'-DDE | 760.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGC10 | 4,4'-DDT | 150.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGD06 | 4,4'-DDD | 1300.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGD06 | 4,4'-DDE | 850.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGD06 | 4,4'-DDT | 290.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGD06 | DELTA-BHC | 170.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGD10 | 4,4'-DDD | 710.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGD10 | 4,4'-DDE | 520.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGD10 | 4,4'-DDT | 360.00 | | 8/08/91 | SEDIMENT | BASIN |
| SGF07 | 4,4'-DDD | 250.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGF07 | 4,4'-DDE | 340.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGF07 | 4,4'-DDT | 150.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGF07 | BETA-BHC | 18.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGG03 | 4,4'-DDD | 570.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGG03 | 4,4'-DDE | 930.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGG03 | 4,4'-DDT | 170.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGG03 | ALPHA-BHC | 14.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGG08 | 4,4'-DDD | 570.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGG08 | 4,4'-DDE | 530.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGG08 | 4,4'-DDT | 200.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGG08 | DELTA-BHC | 54.00 | J | 8/11/91 | SEDIMENT | BASIN |
| SGG09 | 4,4'-DDD | 440.00 | | 8/09/91 | SEDIMENT | BASIN |
| SGG09 | 4,4'-DDE | 410.00 | | 8/09/91 | SEDIMENT | BASIN |
| SGG09 | 4,4'-DDT | 180.00 | | 8/09/91 | SEDIMENT | BASIN |
| SGH04 | 4,4'-DDD | 490.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGH04 | 4,4'-DDE | 740.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGH04 | 4,4'-DDT | 420.00 | | 8/13/91 | SEDIMENT | BASIN |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN.

FILE: \PRDTN\SD\SUMPE

CLP PESTICIDE/PCB SEDIMENT RESULTS
ALL UNITS ARE UG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|
| SGH08 | 4,4'-DDD | 580.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGH08 | 4,4'-DDE | 560.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGH08 | 4,4'-DDT | 220.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGI10 | 4,4'-DDD | 560.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGI10 | 4,4'-DDE | 1400.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGI10 | 4,4'-DDT | 200.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGI10 | ENDOSULFAN II | 51.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGI10 | HEPTACHLOR EPOXIDE | 17.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ06 | 4,4'-DDD | 200.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ06 | 4,4'-DDE | 210.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ06 | 4,4'-DDT | 84.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ07 | 4,4'-DDD | 510.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ07 | 4,4'-DDE | 830.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ07 | 4,4'-DDT | 310.00 | | 8/11/91 | SEDIMENT | BASIN |
| SGJ07 | ALPHA-BHC | 8.90 | | 8/11/91 | SEDIMENT | BASIN |
| SGK04 | 4,4'-DDD | 1800.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGK04 | 4,4'-DDE | 1100.00 | | 8/13/91 | SEDIMENT | BASIN |
| SGK04 | 4,4'-DDT | 4000.00 | | 8/13/91 | SEDIMENT | BASIN |
| | | | | | | |
| SGOD06 | BETA-BHC | 7.20 | | 8/28/91 | SEDIMENT | OUTFALL DITCH |
| SGOD17 | 4,4'-DDE | 9.40 | | 8/28/91 | SEDIMENT | OUTFALL DITCH |
| SGOD17DUP | 4,4'-DDD | 9.80 | | 8/28/91 | SEDIMENT | OUTFALL DITCH |
| SGOD17DUP | 4,4'-DDE | 10.00 | | 8/28/91 | SEDIMENT | OUTFALL DITCH |
| SGOD17DUP | HEPTACHLOR EPOXIDE | 8.50 | | 8/28/91 | SEDIMENT | OUTFALL DITCH |
| SGOD20 | 4,4'-DDD | 59.00 | | 8/29/91 | SEDIMENT | OUTFALL DITCH |
| SGOD20 | 4,4'-DDE | 920.00 | J | 8/29/91 | SEDIMENT | OUTFALL DITCH |
| | | | | | | |
| SGDD01 | 4,4'-DDD | 73.00 | | 8/28/91 | SEDIMENT | DISCHARGE DITCH |
| SGDD01 | 4,4'-DDE | 70.00 | | 8/28/91 | SEDIMENT | DISCHARGE DITCH |
| SGDD01 | 4,4'-DDT | 38.00 | | 8/28/91 | SEDIMENT | DISCHARGE DITCH |
| SGDD01 | BETA-BHC | 7.30 | | 8/28/91 | SEDIMENT | DISCHARGE DITCH |
| | | | | | | |
| SCC302 | 4,4'-DDD | 100.00 | | 8/27/91 | SEDIMENT | FRMR DISCH DTCH |
| SCC302 | 4,4'-DDE | 290.00 | | 8/27/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD05 | 4,4'-DDD | 300.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD05 | 4,4'-DDE | 260.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD05 | 4,4'-DDT | 170.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD06 | 4,4'-DDD | 120.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD06 | 4,4'-DDE | 150.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |
| SGBD06 | 4,4'-DDT | 34.00 | | 8/20/91 | SEDIMENT | FRMR DISCH DTCH |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN.

FILE: \PRDTN\SD\SUMPE

LABORATORY SCREENING RESULTS

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC101 | HEXACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC101 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC101 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC103 | HEXACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC103 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC103 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC105 | HEXACHLOROBENZENE | | 1.00 | TR | 8/23/91 | SED CORE | BASIN |
| SCC105 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC105 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC201 | HEXACHLOROBENZENE | 1.70 | 1.00 | | 8/23/91 | SED CORE | BASIN |
| SCC201 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC201 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC203 | HEXACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC203 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC203 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC205 | HEXACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC205 | PENTACHLOROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SCC205 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/23/91 | SED CORE | BASIN |
| SGA07 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGA07 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGA07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB04 | HEXACHLOROBENZENE | 1.20 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGB04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGB04 | PENTACHLORONITROBENZENE | 1.20 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGB05 | HEXACHLOROBENZENE | 4.50 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGB05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGB05 | PENTACHLORONITROBENZENE | 4.30 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGB06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGB06 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGB06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGB07 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB08 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGB08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB08 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGB09 | HEXACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGB09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGB09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGB10 | HEXACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGB10 | PENTACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGB10 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGC04 | HEXACHLOROBENZENE | 3.80 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGC04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGC04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGC05 | HEXACHLOROBENZENE | 30.70 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGC05 | PENTACHLOROBENZENE | 1.90 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGC05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGC07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

FILE:\PROTN\SC\SUMHEX

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGC07 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGC07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC08 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC08 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGC09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGC09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGC10 | HEXACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGC10 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGC10 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGD03 | HEXACHLOROBENZENE | 51.90 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGD03 | PENTACHLOROBENZENE | 4.40 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGD03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGD04 | HEXACHLOROBENZENE | 11.40 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGD04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGD04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGD05 | HEXACHLOROBENZENE | 1.00 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGD05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGD05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGD06 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD06DUP | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGD06DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD06DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGD07 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD08 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD08 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGD09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGD09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGD11 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGD11 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGD11 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGE02 | HEXACHLOROBENZENE | 265.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE02 | PENTACHLOROBENZENE | 22.50 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE02 | PENTACHLORONITROBENZENE | 67.30 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE03 | HEXACHLOROBENZENE | 110.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE03 | PENTACHLOROBENZENE | 7.50 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGE04 | HEXACHLOROBENZENE | 44.80 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE04 | PENTACHLOROBENZENE | 2.70 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGE04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGE05 | HEXACHLOROBENZENE | 3.70 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGE05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

FILE:\PROJN\SD\SUMHEX

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGE06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE06 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGE06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGE07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE07 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGE08 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGE08 | PENTACHLORONITROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGE09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGE09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGE09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGE10 | HEXACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGE10 | PENTACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGE10 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF01 | HEXACHLOROBENZENE | 32.50 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF01 | PENTACHLOROBENZENE | 2.30 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF01 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGF02 | HEXACHLOROBENZENE | 122.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF02 | PENTACHLOROBENZENE | 11.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGF03 | HEXACHLOROBENZENE | 35.60 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF03 | PENTACHLOROBENZENE | 2.20 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF03 | PENTACHLORONITROBENZENE | 19.40 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF04 | HEXACHLOROBENZENE | 66.20 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF04 | PENTACHLOROBENZENE | 5.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGF04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGF05 | HEXACHLOROBENZENE | 1.40 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGF05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGF05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGF06 | HEXACHLOROBENZENE | 1.40 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGF06 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGF06 | PENTACHLORONITROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGF08 | HEXACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF08 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF09 | HEXACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF10 | HEXACHLOROBENZENE | | 1.00 | TR | 8/09/91 | SED GRAB | BASIN |
| SGF10 | PENTACHLOROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGF10 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/09/91 | SED GRAB | BASIN |
| SGG01 | HEXACHLOROBENZENE | 3.10 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGG01 | PENTACHLOROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGG01 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGG02 | HEXACHLOROBENZENE | 6.00 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGG02 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGG02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGG03 | HEXACHLOROBENZENE | 11.24 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGG03 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGG03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGG04 | HEXACHLOROBENZENE | 4.30 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGG04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGG04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGG05 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGG05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGG05 | PENTACHLORONITROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGG06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGG06 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGG06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGG07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGG07 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGG07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH02 | HEXACHLOROBENZENE | 1.70 | 1.00 | | 8/14/91 | SED GRAB | BASIN |
| SGH02 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGH02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGH03 | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGH03 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGH03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGH05 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGH05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGH05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGH06 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGH06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH06DUP | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH06DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH06DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGH07 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGH09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGH09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGH09DUP | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGH09DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGH09DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGH10 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH10 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH10 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI03 | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGI03 | PENTACHLOROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGI03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGI04 | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGI04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGI04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGI04DUP | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGI04DUP | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGI04DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGI05 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

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LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

3 8 1096

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGI05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGI05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI06 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGI06 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGI07 | PENTACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGI07 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI08 | HEXACHLOROBENZENE | | 1.00 | TR | 8/13/91 | SED GRAB | BASIN |
| SGI08 | PENTACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI08 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGI09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGI09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGI09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGJ03 | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGJ03 | PENTACHLOROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGJ03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGJ04 | HEXACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGJ04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGJ04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGJ05 | HEXACHLOROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGJ05 | PENTACHLOROBENZENE | 1.40 | 1.00 | | 8/13/91 | SED GRAB | BASIN |
| SGJ05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGJ09 | HEXACHLOROBENZENE | | 1.00 | TR | 8/10/91 | SED GRAB | BASIN |
| SGJ09 | PENTACHLOROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGJ09 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/10/91 | SED GRAB | BASIN |
| SGK05 | HEXACHLOROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGK05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/14/91 | SED GRAB | BASIN |
| SGK05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/14/91 | SED GRAB | BASIN |
| SGOD01 | HEXACHLOROBENZENE | 85.70 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD01 | PENTACHLOROBENZENE | 5.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD01 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD02 | HEXACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD02 | PENTACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD03 | HEXACHLOROBENZENE | 20.70 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD03 | PENTACHLOROBENZENE | 2.60 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD04 | HEXACHLOROBENZENE | 1.20 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD04 | PENTACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD04 | PENTACHLORONITROBENZENE | 6.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD05 | HEXACHLOROBENZENE | 114.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD05 | PENTACHLOROBENZENE | 19.60 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD05 | PENTACHLORONITROBENZENE | 105.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | HEXACHLOROBENZENE | 63.50 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | PENTACHLOROBENZENE | 4.70 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD07 | HEXACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | OUTFALL DITCH |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SG0007 | PENTACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0007 | PENTACHLORONITROBENZENE | 2.90 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0008 | HEXACHLOROBENZENE | 160.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0008 | PENTACHLOROBENZENE | 8.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0008 | PENTACHLORONITROBENZENE | 618.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0009 | HEXACHLOROBENZENE | 466.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0009 | PENTACHLOROBENZENE | 51.30 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0009 | PENTACHLORONITROBENZENE | 532.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0010 | HEXACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0010 | PENTACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0010 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0011 | HEXACHLOROBENZENE | 677.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0011 | PENTACHLOROBENZENE | 55.90 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0011 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0012 | HEXACHLOROBENZENE | 69.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0012 | PENTACHLOROBENZENE | 5.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0012 | PENTACHLORONITROBENZENE | 87.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0013 | HEXACHLOROBENZENE | 727.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0013 | PENTACHLOROBENZENE | 127.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0013 | PENTACHLORONITROBENZENE | 152.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0014 | HEXACHLOROBENZENE | 71.50 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0014 | PENTACHLOROBENZENE | 6.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0014 | PENTACHLORONITROBENZENE | 12.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0015 | HEXACHLOROBENZENE | 1002.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0015 | PENTACHLOROBENZENE | 541.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0015 | PENTACHLORONITROBENZENE | 302.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0016 | HEXACHLOROBENZENE | 239.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0016 | PENTACHLOROBENZENE | 17.70 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0016 | PENTACHLORONITROBENZENE | 108.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0017 | HEXACHLOROBENZENE | 152.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0017 | PENTACHLOROBENZENE | 9.90 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0017 | PENTACHLORONITROBENZENE | 397.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0018 | HEXACHLOROBENZENE | 226.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0018 | PENTACHLOROBENZENE | 19.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0018 | PENTACHLORONITROBENZENE | 328.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0019 | HEXACHLOROBENZENE | 236.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0019 | PENTACHLOROBENZENE | 23.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0019 | PENTACHLORONITROBENZENE | 61.40 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0020 | HEXACHLOROBENZENE | 61.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0020 | PENTACHLOROBENZENE | 3.10 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0020 | PENTACHLORONITROBENZENE | 5.20 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0021 | HEXACHLOROBENZENE | 14.80 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0021 | PENTACHLOROBENZENE | 1.60 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0021 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0022 | HEXACHLOROBENZENE | 104.00 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0022 | PENTACHLOROBENZENE | 7.70 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0022 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0023 | HEXACHLOROBENZENE | 33.00 | 1.00 | | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SG0023 | PENTACHLOROBENZENE | 1.80 | 1.00 | | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SG0023 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/30/91 | SED GRAB | OUTFALL DITCH |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

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LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SG0024 | HEXACHLOROBENZENE | 65.70 | 1.00 | | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SG0024 | PENTACHLOROBENZENE | 3.00 | 1.00 | | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SG0024 | PENTACHLORONITROBENZENE | 13.10 | 1.00 | | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SG0025 | HEXACHLOROBENZENE | 83.60 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0025 | PENTACHLOROBENZENE | 10.30 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SG0025 | PENTACHLORONITROBENZENE | 1.40 | 1.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGDD01 | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD02 | HEXACHLOROBENZENE | 3.50 | 1.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD02 | PENTACHLOROBENZENE | | 1.00 | TR | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD03 | HEXACHLOROBENZENE | 970.00 | 1.00 | | 8/29/91 | SED GRAB | DISCHARGE DITCH |
| SGDD03 | PENTACHLOROBENZENE | 74.80 | 1.00 | | 8/29/91 | SED GRAB | DISCHARGE DITCH |
| SGDD03 | PENTACHLORONITROBENZENE | 43.80 | 1.00 | | 8/29/91 | SED GRAB | DISCHARGE DITCH |
| SGDD04 | HEXACHLOROBENZENE | 55.20 | 1.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD04 | PENTACHLOROBENZENE | 4.00 | 1.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC301 | HEXACHLOROBENZENE | | 1.00 | TR | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC301 | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC301 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC301DUP | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC301DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC301DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303 | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303 | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303DUP | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304DUP | HEXACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304DUP | PENTACHLOROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC304DUP | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC305 | HEXACHLOROBENZENE | 7.80 | 1.00 | | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC305 | PENTACHLOROBENZENE | | 1.00 | TR | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC305 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SGBD01 | HEXACHLOROBENZENE | 2.90 | 1.00 | | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD01 | PENTACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD01 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD02 | HEXACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD02 | PENTACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD02 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD03 | HEXACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

LABORATORY SCREENING --- SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGBD03 | PENTACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD03 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD04 | HEXACHLOROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD04 | PENTACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD04 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | HEXACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | PENTACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | HEXACHLOROBENZENE | 7.40 | 1.00 | | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | PENTACHLOROBENZENE | | 1.00 | TR | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | PENTACHLORONITROBENZENE | | 1.00 | ND | 8/29/91 | SED GRAB | FRMR DISCH DTCH |

NOTES: ND - NOT DETECTED
TR - TRACE (BELOW THE DETECTION LIMIT)

LABORATORY CONVENTIONAL PARAMETERS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALUE | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC102 | PH | 7.14 | | | 8/23/91 | SED CORE | BASIN |
| SCC102 | SULFATE | 140.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC102 | SULFIDE | 1680.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC102 | TOC | 1680.00 | 20.00 | | 8/23/91 | SED CORE | BASIN |
| SCC104 | PH | 7.19 | | | 8/23/91 | SED CORE | BASIN |
| SCC104 | SULFATE | 91.70 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC104 | SULFIDE | 630.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC104 | TOC | 17400.00 | 20.00 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | PH | 7.71 | | | 8/23/91 | SED CORE | BASIN |
| SCC202 | SULFATE | 68.90 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | SULFIDE | 1030.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | TOC | 4310.00 | 20.00 | | 8/23/91 | SED CORE | BASIN |
| SCC204 | PH | 7.81 | | | 8/23/91 | SED CORE | BASIN |
| SCC204 | SULFATE | 181.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC204 | SULFIDE | 373.00 | 50.00 | | 8/23/91 | SED CORE | BASIN |
| SCC204 | TOC | 9610.00 | 20.00 | | 8/23/91 | SED CORE | BASIN |
| SGC05 | PH | 7.08 | | | 8/13/91 | SED GRAB | BASIN |
| SGC05 | SULFATE | | 100.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC05 | SULFIDE | 259.00 | 10.00 | | 8/13/91 | SED GRAB | BASIN |
| SGC05 | TOC | 6000.00 | 20.00 | | 8/13/91 | SED GRAB | BASIN |
| SGC06 | PH | 7.02 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06 | SULFATE | 995.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC06 | SULFIDE | 2290.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC06 | TOC | 28100.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | PH | 6.97 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | SULFATE | 1250.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | SULFIDE | 2300.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | TOC | 36500.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGC10 | PH | 6.97 | | | 8/08/91 | SED GRAB | BASIN |
| SGC10 | SULFATE | 1330.00 | 100.00 | | 8/08/91 | SED GRAB | BASIN |
| SGC10 | SULFIDE | 2020.00 | 10.00 | | 8/08/91 | SED GRAB | BASIN |
| SGC10 | TOC | 39000.00 | 20.00 | | 8/08/91 | SED GRAB | BASIN |

LABORATORY CONVENTIONAL PARAMETERS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

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| SAMPLE ID | PARAMETER | VALUE | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGD06 | PH | 6.93 | | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | SULFATE | 1290.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | SULFIDE | 2830.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | TOC | 34800.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGD10 | PH | 7.02 | | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | SULFATE | 1160.00 | 100.00 | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | SULFIDE | 1730.00 | 10.00 | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | TOC | 43500.00 | 20.00 | | 8/08/91 | SED GRAB | BASIN |
| SGF07 | PH | 7.18 | | | 8/11/91 | SED GRAB | BASIN |
| SGF07 | SULFATE | 997.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGF07 | SULFIDE | 2410.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGF07 | TOC | 26900.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGG03 | PH | 7.10 | | | 8/13/91 | SED GRAB | BASIN |
| SGG03 | SULFATE | | 100.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGG03 | SULFIDE | 820.00 | 10.00 | | 8/13/91 | SED GRAB | BASIN |
| SGG03 | TOC | 13300.00 | 20.00 | | 8/13/91 | SED GRAB | BASIN |
| SGG08 | PH | 7.12 | | | 8/11/91 | SED GRAB | BASIN |
| SGG08 | SULFATE | 581.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGG08 | SULFIDE | 2370.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGG08 | TOC | 33300.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGG09 | PH | 7.17 | | | 8/09/91 | SED GRAB | BASIN |
| SGG09 | SULFATE | 1360.00 | 50.00 | | 8/09/91 | SED GRAB | BASIN |
| SGG09 | SULFIDE | 1870.00 | 100.00 | | 8/09/91 | SED GRAB | BASIN |
| SGG09 | TOC | 30900.00 | 20.00 | | 8/09/91 | SED GRAB | BASIN |
| SGH04 | PH | 7.25 | | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | SULFATE | | 100.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH04 | SULFIDE | 1850.00 | 10.00 | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | TOC | 18900.00 | 20.00 | | 8/13/91 | SED GRAB | BASIN |
| SGH08 | PH | 7.22 | | | 8/11/91 | SED GRAB | BASIN |
| SGH08 | SULFATE | 602.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGH08 | SULFIDE | 2660.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGH08 | TOC | 29800.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGI10 | PH | 7.25 | | | 8/11/91 | SED GRAB | BASIN |

LABORATORY CONVENTIONAL PARAMETERS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALUE | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGI10 | SULFATE | 1200.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGI10 | SULFIDE | 2540.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGI10 | TOC | 80500.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | PH | 7.27 | | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | SULFATE | 1020.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | SULFIDE | 1010.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | TOC | 39400.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | PH | 7.37 | | | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | SULFATE | 228.00 | 100.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | SULFIDE | 1360.00 | 10.00 | | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | TOC | 36900.00 | 20.00 | | 8/11/91 | SED GRAB | BASIN |
| SGK04 | PH | 7.13 | | | 8/13/91 | SED GRAB | BASIN |
| SGK04 | SULFATE | | 100.00 | ND | 8/13/91 | SED GRAB | BASIN |
| SGK04 | SULFIDE | 1330.00 | 10.00 | | 8/13/91 | SED GRAB | BASIN |
| SGK04 | TOC | 14000.00 | 20.00 | | 8/13/91 | SED GRAB | BASIN |
| SGOD06 | PH | 7.10 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | SULFATE | 286.00 | 50.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | SULFIDE | 418.00 | 50.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | TOC | 9390.00 | 20.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | PH | 6.50 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | SULFATE | 464.00 | 50.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | SULFIDE | | 50.00 | ND | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | TOC | 737.00 | 20.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | PH | 7.21 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | SULFATE | 472.00 | 50.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | SULFIDE | | 50.00 | ND | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | TOC | 698.00 | 20.00 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | PH | 7.74 | | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | SULFATE | 232.00 | 50.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | SULFIDE | | 50.00 | ND | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | TOC | 2510.00 | 20.00 | | 8/29/91 | SED GRAB | OUTFALL DITCH |

LABORATORY CONVENTIONAL PARAMETERS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

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| SAMPLE ID | PARAMETER | VALUE | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGDD01 | PH | 7.61 | | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | SULFATE | 509.00 | 50.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | SULFIDE | 1180.00 | 50.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | TOC | 8420.00 | 20.00 | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC302 | PH | 7.23 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | SULFATE | 95.30 | 50.00 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | SULFIDE | | 50.00 | ND | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | TOC | 11200.00 | 20.00 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | PH | 7.70 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | SULFATE | 112.00 | 50.00 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | SULFIDE | 108.00 | 50.00 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | TOC | 9860.00 | 20.00 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SGBD05 | PH | 7.02 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | SULFATE | 105.00 | 50.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | SULFIDE | 1450.00 | 50.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | TOC | 29400.00 | 20.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | PH | 7.13 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | SULFATE | 90.30 | 50.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | SULFIDE | 1530.00 | 50.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | TOC | 32700.00 | 20.00 | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| RS02 | PH | 6.41 | | | 8/26/91 | SEDIMENT | RESID SAMP |
| RS02 | SULFATE | 114.00 | 50.00 | | 8/26/91 | SEDIMENT | RESID SAMP |
| RS02 | SULFIDE | | 50.00 | ND | 8/26/91 | SEDIMENT | RESID SAMP |
| RS02 | TOC | 9890.00 | 20.00 | | 8/26/91 | SEDIMENT | RESID SAMP |

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SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC102 | ANTIMONY | | 8.51 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | ARSENIC | 4.30 | | J | 8/23/91 | SED CORE | BASIN |
| SCC102 | BERYLLIUM | | 1.40 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | CADMIUM | | .53 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | CHROMIUM | 55.40 | | | 8/23/91 | SED CORE | BASIN |
| SCC102 | COPPER | 16.60 | | | 8/23/91 | SED CORE | BASIN |
| SCC102 | CYANIDE | | .55 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | LEAD | 26.20 | | J | 8/23/91 | SED CORE | BASIN |
| SCC102 | MERCURY | 14.70 | | J | 8/23/91 | SED CORE | BASIN |
| SCC102 | NICKEL | | 26.00 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | SELENIUM | | .82 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | SILVER | | .53 | R | 8/23/91 | SED CORE | BASIN |
| SCC102 | THALLIUM | | 3.28 | U | 8/23/91 | SED CORE | BASIN |
| SCC102 | ZINC | 86.40 | | | 8/23/91 | SED CORE | BASIN |
| SCC104 | ANTIMONY | | 8.60 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | ARSENIC | 4.60 | | J | 8/23/91 | SED CORE | BASIN |
| SCC104 | BERYLLIUM | | 1.60 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | CADMIUM | | .54 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | CHROMIUM | 69.40 | | | 8/23/91 | SED CORE | BASIN |
| SCC104 | COPPER | 15.10 | | | 8/23/91 | SED CORE | BASIN |
| SCC104 | CYANIDE | | .46 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | LEAD | 21.00 | | J | 8/23/91 | SED CORE | BASIN |
| SCC104 | MERCURY | 1.70 | | J | 8/23/91 | SED CORE | BASIN |
| SCC104 | NICKEL | | 28.90 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | SELENIUM | | .68 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | SILVER | | .54 | R | 8/23/91 | SED CORE | BASIN |
| SCC104 | THALLIUM | | 2.70 | U | 8/23/91 | SED CORE | BASIN |
| SCC104 | ZINC | 85.00 | | | 8/23/91 | SED CORE | BASIN |
| SCC202 | ANTIMONY | | 6.97 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | ARSENIC | 2.50 | | J | 8/23/91 | SED CORE | BASIN |
| SCC202 | BERYLLIUM | | .59 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | CADMIUM | | .44 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | CHROMIUM | 28.30 | | | 8/23/91 | SED CORE | BASIN |
| SCC202 | COPPER | 9.50 | | | 8/23/91 | SED CORE | BASIN |
| SCC202 | CYANIDE | | .43 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | LEAD | 26.40 | | J | 8/23/91 | SED CORE | BASIN |
| SCC202 | MERCURY | 5.00 | | J | 8/23/91 | SED CORE | BASIN |
| SCC202 | NICKEL | | 6.50 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | SELENIUM | | .64 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | SILVER | | .44 | R | 8/23/91 | SED CORE | BASIN |
| SCC202 | THALLIUM | | 2.55 | U | 8/23/91 | SED CORE | BASIN |
| SCC202 | ZINC | 26.40 | | | 8/23/91 | SED CORE | BASIN |

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SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC204 | ANTIMONY | | 6.63 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | ARSENIC | 2.20 | | J | 8/23/91 | SED CORE | BASIN |
| SCC204 | BERYLLIUM | | .50 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | CADMIUM | | .41 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | CHROMIUM | 22.50 | | | 8/23/91 | SED CORE | BASIN |
| SCC204 | COPPER | 9.30 | | | 8/23/91 | SED CORE | BASIN |
| SCC204 | CYANIDE | | .41 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | LEAD | 24.60 | | J | 8/23/91 | SED CORE | BASIN |
| SCC204 | MERCURY | 5.10 | | J | 8/23/91 | SED CORE | BASIN |
| SCC204 | NICKEL | | 6.50 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | SELENIUM | | .56 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | SILVER | | .41 | R | 8/23/91 | SED CORE | BASIN |
| SCC204 | THALLIUM | | 2.24 | U | 8/23/91 | SED CORE | BASIN |
| SCC204 | ZINC | 21.90 | | | 8/23/91 | SED CORE | BASIN |
| SGC05 | ANTIMONY | | 4.85 | R | 8/13/91 | SED GRAB | BASIN |
| SGC05 | ARSENIC | 2.10 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC05 | BERYLLIUM | | .23 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | CADMIUM | | .30 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | CHROMIUM | 6.10 | | | 8/13/91 | SED GRAB | BASIN |
| SGC05 | COPPER | | 3.30 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | CYANIDE | | .31 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | LEAD | 5.90 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC05 | MERCURY | 7.10 | | | 8/13/91 | SED GRAB | BASIN |
| SGC05 | NICKEL | | 2.50 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | SELENIUM | | .39 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | SILVER | | .30 | U | 8/13/91 | SED GRAB | BASIN |
| SGC05 | THALLIUM | | 1.56 | R | 8/13/91 | SED GRAB | BASIN |
| SGC05 | ZINC | 8.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC06 | ANTIMONY | | 17.09 | R | 8/11/91 | SED GRAB | BASIN |
| SGC06 | ARSENIC | 6.70 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06 | BERYLLIUM | | 2.00 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06 | CADMIUM | | 1.07 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06 | CHROMIUM | 26.80 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06 | COPPER | 21.30 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06 | CYANIDE | | .93 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06 | LEAD | 26.70 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06 | MERCURY | 26.90 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06 | NICKEL | | 13.50 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06 | SELENIUM | | 1.17 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06 | SILVER | | 1.07 | R | 8/11/91 | SED GRAB | BASIN |
| SGC06 | THALLIUM | | 4.70 | R | 8/11/91 | SED GRAB | BASIN |
| SGC06 | ZINC | 104.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | ANTIMONY | | 20.02 | R | 8/11/91 | SED GRAB | BASIN |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGC06DUP | ARSENIC | 6.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | BERYLLIUM | | 2.30 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | CADMIUM | | 1.25 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | CHROMIUM | 29.20 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | COPPER | 21.50 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | CYANIDE | 1.40 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | LEAD | 22.40 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | MERCURY | 29.90 | | | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | NICKEL | | 14.00 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | SELENIUM | | 6.70 | U | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | SILVER | | 1.25 | R | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | THALLIUM | | 5.08 | R | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | ZINC | 112.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGC10 | ANTIMONY | 22.80 | | J | 8/08/91 | SED GRAB | BASIN |
| SGC10 | ARSENIC | 8.30 | | J | 8/08/91 | SED GRAB | BASIN |
| SGC10 | BERYLLIUM | | 1.40 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | CADMIUM | | 1.32 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | CHROMIUM | 35.90 | | | 8/08/91 | SED GRAB | BASIN |
| SGC10 | COPPER | 25.50 | | J | 8/08/91 | SED GRAB | BASIN |
| SGC10 | CYANIDE | | 1.10 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | LEAD | 24.60 | | J | 8/08/91 | SED GRAB | BASIN |
| SGC10 | MERCURY | 18.80 | | | 8/08/91 | SED GRAB | BASIN |
| SGC10 | NICKEL | | 21.30 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | SELENIUM | | 1.30 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | SILVER | | 1.32 | U | 8/08/91 | SED GRAB | BASIN |
| SGC10 | THALLIUM | | 5.22 | R | 8/08/91 | SED GRAB | BASIN |
| SGC10 | ZINC | 144.00 | | J | 8/08/91 | SED GRAB | BASIN |
| SGD06 | ANTIMONY | | 24.24 | R | 8/11/91 | SED GRAB | BASIN |
| SGD06 | ARSENIC | 7.30 | | J | 8/11/91 | SED GRAB | BASIN |
| SGD06 | BERYLLIUM | | 2.70 | U | 8/11/91 | SED GRAB | BASIN |
| SGD06 | CADMIUM | | 1.52 | U | 8/11/91 | SED GRAB | BASIN |
| SGD06 | CHROMIUM | 33.30 | | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | COPPER | 20.40 | | J | 8/11/91 | SED GRAB | BASIN |
| SGD06 | CYANIDE | 1.50 | | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | LEAD | 22.40 | | J | 8/11/91 | SED GRAB | BASIN |
| SGD06 | MERCURY | 22.40 | | | 8/11/91 | SED GRAB | BASIN |
| SGD06 | NICKEL | | 22.00 | U | 8/11/91 | SED GRAB | BASIN |
| SGD06 | SELENIUM | | 2.40 | U | 8/11/91 | SED GRAB | BASIN |
| SGD06 | SILVER | | 1.52 | R | 8/11/91 | SED GRAB | BASIN |
| SGD06 | THALLIUM | | 6.02 | R | 8/11/91 | SED GRAB | BASIN |
| SGD06 | ZINC | 129.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGD10 | ANTIMONY | | 21.71 | R | 8/08/91 | SED GRAB | BASIN |
| SGD10 | ARSENIC | 8.40 | | J | 8/08/91 | SED GRAB | BASIN |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGD10 | BERYLLIUM | | 1.60 | U | 8/08/91 | SED GRAB | BASIN |
| SGD10 | CADMIUM | | 1.36 | U | 8/08/91 | SED GRAB | BASIN |
| SGD10 | CHROMIUM | 43.20 | | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | COPPER | 27.80 | | J | 8/08/91 | SED GRAB | BASIN |
| SGD10 | CYANIDE | 1.30 | | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | LEAD | 24.30 | | J | 8/08/91 | SED GRAB | BASIN |
| SGD10 | MERCURY | 30.70 | | | 8/08/91 | SED GRAB | BASIN |
| SGD10 | NICKEL | | 21.40 | U | 8/08/91 | SED GRAB | BASIN |
| SGD10 | SELENIUM | | 1.26 | U | 8/08/91 | SED GRAB | BASIN |
| SGD10 | SILVER | | 1.36 | U | 8/08/91 | SED GRAB | BASIN |
| SGD10 | THALLIUM | | 5.05 | R | 8/08/91 | SED GRAB | BASIN |
| SGD10 | ZINC | 152.00 | | J | 8/08/91 | SED GRAB | BASIN |
| SGF07 | ANTIMONY | 24.60 | | J | 8/11/91 | SED GRAB | BASIN |
| SGF07 | ARSENIC | 7.40 | | J | 8/11/91 | SED GRAB | BASIN |
| SGF07 | BERYLLIUM | | 2.40 | U | 8/11/91 | SED GRAB | BASIN |
| SGF07 | CADMIUM | | 1.24 | U | 8/11/91 | SED GRAB | BASIN |
| SGF07 | CHROMIUM | 37.10 | | | 8/11/91 | SED GRAB | BASIN |
| SGF07 | COPPER | 35.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGF07 | CYANIDE | | .97 | U | 8/11/91 | SED GRAB | BASIN |
| SGF07 | LEAD | 30.70 | | J | 8/11/91 | SED GRAB | BASIN |
| SGF07 | MERCURY | 34.00 | | | 8/11/91 | SED GRAB | BASIN |
| SGF07 | NICKEL | | 17.80 | U | 8/11/91 | SED GRAB | BASIN |
| SGF07 | SELENIUM | | 1.14 | U | 8/11/91 | SED GRAB | BASIN |
| SGF07 | SILVER | | 1.24 | R | 8/11/91 | SED GRAB | BASIN |
| SGF07 | THALLIUM | | 4.57 | R | 8/11/91 | SED GRAB | BASIN |
| SGF07 | ZINC | 170.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGG03 | ANTIMONY | | 8.54 | R | 8/13/91 | SED GRAB | BASIN |
| SGG03 | ARSENIC | 3.40 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG03 | BERYLLIUM | | 1.00 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | CADMIUM | | .53 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | CHROMIUM | 21.30 | | | 8/13/91 | SED GRAB | BASIN |
| SGG03 | COPPER | 25.30 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG03 | CYANIDE | | .52 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | LEAD | 16.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG03 | MERCURY | 20.10 | | | 8/13/91 | SED GRAB | BASIN |
| SGG03 | NICKEL | | 11.40 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | SELENIUM | | .60 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | SILVER | | .67 | U | 8/13/91 | SED GRAB | BASIN |
| SGG03 | THALLIUM | | 2.42 | R | 8/13/91 | SED GRAB | BASIN |
| SGG03 | ZINC | 89.70 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG08 | ANTIMONY | | 17.41 | R | 8/11/91 | SED GRAB | BASIN |
| SGG08 | ARSENIC | 6.90 | | J | 8/11/91 | SED GRAB | BASIN |
| SGG08 | BERYLLIUM | | 2.10 | U | 8/11/91 | SED GRAB | BASIN |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGG08 | CADMIUM | | 1.09 | U | 8/11/91 | SED GRAB | BASIN |
| SGG08 | CHROMIUM | 41.00 | | | 8/11/91 | SED GRAB | BASIN |
| SGG08 | COPPER | 28.20 | | J | 8/11/91 | SED GRAB | BASIN |
| SGG08 | CYANIDE | | .98 | U | 8/11/91 | SED GRAB | BASIN |
| SGG08 | LEAD | 23.80 | | J | 8/11/91 | SED GRAB | BASIN |
| SGG08 | MERCURY | 30.20 | | | 8/11/91 | SED GRAB | BASIN |
| SGG08 | NICKEL | | 19.80 | U | 8/11/91 | SED GRAB | BASIN |
| SGG08 | SELENIUM | | 1.15 | U | 8/11/91 | SED GRAB | BASIN |
| SGG08 | SILVER | | 1.09 | R | 8/11/91 | SED GRAB | BASIN |
| SGG08 | THALLIUM | | 4.60 | R | 8/11/91 | SED GRAB | BASIN |
| SGG08 | ZINC | 152.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGG09 | ANTIMONY | 22.70 | | J | 8/09/91 | SED GRAB | BASIN |
| SGG09 | ARSENIC | 7.10 | | J | 8/09/91 | SED GRAB | BASIN |
| SGG09 | BERYLLIUM | | 1.30 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | CADMIUM | | 1.26 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | CHROMIUM | 29.50 | | | 8/09/91 | SED GRAB | BASIN |
| SGG09 | COPPER | 29.80 | | J | 8/09/91 | SED GRAB | BASIN |
| SGG09 | CYANIDE | | 1.02 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | LEAD | 24.90 | | J | 8/09/91 | SED GRAB | BASIN |
| SGG09 | MERCURY | 31.20 | | | 8/09/91 | SED GRAB | BASIN |
| SGG09 | NICKEL | | 17.70 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | SELENIUM | | 1.17 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | SILVER | | 1.26 | U | 8/09/91 | SED GRAB | BASIN |
| SGG09 | THALLIUM | | 4.69 | R | 8/09/91 | SED GRAB | BASIN |
| SGG09 | ZINC | 144.00 | | J | 8/09/91 | SED GRAB | BASIN |
| SGH04 | ANTIMONY | | 12.22 | R | 8/13/91 | SED GRAB | BASIN |
| SGH04 | ARSENIC | 6.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH04 | BERYLLIUM | | 1.30 | U | 8/13/91 | SED GRAB | BASIN |
| SGH04 | CADMIUM | | .76 | U | 8/13/91 | SED GRAB | BASIN |
| SGH04 | CHROMIUM | 44.60 | | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | COPPER | 31.60 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH04 | CYANIDE | 1.40 | | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | LEAD | 28.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH04 | MERCURY | 63.10 | | | 8/13/91 | SED GRAB | BASIN |
| SGH04 | NICKEL | | 20.80 | U | 8/13/91 | SED GRAB | BASIN |
| SGH04 | SELENIUM | | .92 | U | 8/13/91 | SED GRAB | BASIN |
| SGH04 | SILVER | | 1.00 | U | 8/13/91 | SED GRAB | BASIN |
| SGH04 | THALLIUM | | 3.68 | R | 8/13/91 | SED GRAB | BASIN |
| SGH04 | ZINC | 133.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH08 | ANTIMONY | | 20.34 | R | 8/11/91 | SED GRAB | BASIN |
| SGH08 | ARSENIC | 8.10 | | J | 8/11/91 | SED GRAB | BASIN |
| SGH08 | BERYLLIUM | | 2.40 | U | 8/11/91 | SED GRAB | BASIN |
| SGH08 | CADMIUM | | 1.27 | U | 8/11/91 | SED GRAB | BASIN |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGH08 | CHROMIUM | 42.20 | | | 8/11/91 | SED GRAB | BASIN |
| SGH08 | COPPER | 36.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGH08 | CYANIDE | | 1.11 | U | 8/11/91 | SED GRAB | BASIN |
| SGH08 | LEAD | 37.70 | | J | 8/11/91 | SED GRAB | BASIN |
| SGH08 | MERCURY | 39.00 | | | 8/11/91 | SED GRAB | BASIN |
| SGH08 | NICKEL | | 21.80 | U | 8/11/91 | SED GRAB | BASIN |
| SGH08 | SELENIUM | | 1.30 | U | 8/11/91 | SED GRAB | BASIN |
| SGH08 | SILVER | | 1.27 | R | 8/11/91 | SED GRAB | BASIN |
| SGH08 | THALLIUM | | 5.19 | R | 8/11/91 | SED GRAB | BASIN |
| SGH08 | ZINC | 202.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | ANTIMONY | | 21.16 | R | 8/11/91 | SED GRAB | BASIN |
| SGI10 | ARSENIC | 14.70 | | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | BERYLLIUM | | 2.50 | U | 8/11/91 | SED GRAB | BASIN |
| SGI10 | CADMIUM | | 1.32 | U | 8/11/91 | SED GRAB | BASIN |
| SGI10 | CHROMIUM | 52.10 | | | 8/11/91 | SED GRAB | BASIN |
| SGI10 | COPPER | 57.50 | | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | CYANIDE | | 1.18 | U | 8/11/91 | SED GRAB | BASIN |
| SGI10 | LEAD | 37.20 | | J | 8/11/91 | SED GRAB | BASIN |
| SGI10 | MERCURY | 290.00 | | | 8/11/91 | SED GRAB | BASIN |
| SGI10 | NICKEL | | 26.00 | U | 8/11/91 | SED GRAB | BASIN |
| SGI10 | SELENIUM | | 1.40 | U | 8/11/91 | SED GRAB | BASIN |
| SGI10 | SILVER | | 1.32 | R | 8/11/91 | SED GRAB | BASIN |
| SGI10 | THALLIUM | | 5.11 | R | 8/11/91 | SED GRAB | BASIN |
| SGI10 | ZINC | 227.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | ANTIMONY | | 22.08 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | ARSENIC | 10.10 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | BERYLLIUM | | 2.60 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | CADMIUM | | 1.38 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | CHROMIUM | 51.90 | | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | COPPER | 43.20 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | CYANIDE | | 1.16 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | LEAD | 44.20 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | MERCURY | 135.00 | | | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | NICKEL | | 23.40 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | SELENIUM | | 1.30 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | SILVER | | 1.38 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | THALLIUM | | 5.18 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | ZINC | 205.00 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | ANTIMONY | | 10.94 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | ARSENIC | 7.60 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | BERYLLIUM | | 1.30 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | CADMIUM | | .68 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | CHROMIUM | 18.80 | | | 8/11/91 | SED GRAB | BASIN |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGJ07 | COPPER | 21.30 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | CYANIDE | | .55 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | LEAD | 15.20 | | J | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | MERCURY | 37.40 | | | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | NICKEL | | 11.60 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | SELENIUM | | .65 | U | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | SILVER | | .68 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | THALLIUM | | 2.42 | R | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | ZINC | 89.10 | | J | 8/11/91 | SED GRAB | BASIN |
| SGK04 | ANTIMONY | | 7.64 | R | 8/13/91 | SED GRAB | BASIN |
| SGK04 | ARSENIC | 3.70 | | J | 8/13/91 | SED GRAB | BASIN |
| SGK04 | BERYLLIUM | | .76 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | CADMIUM | | .48 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | CHROMIUM | 30.80 | | | 8/13/91 | SED GRAB | BASIN |
| SGK04 | COPPER | 18.30 | | J | 8/13/91 | SED GRAB | BASIN |
| SGK04 | CYANIDE | | .48 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | LEAD | 19.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGK04 | MERCURY | 5.70 | | | 8/13/91 | SED GRAB | BASIN |
| SGK04 | NICKEL | | 14.10 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | SELENIUM | | .65 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | SILVER | | .48 | U | 8/13/91 | SED GRAB | BASIN |
| SGK04 | THALLIUM | | 2.61 | R | 8/13/91 | SED GRAB | BASIN |
| SGK04 | ZINC | 83.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGOD06 | ANTIMONY | | 4.90 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | ARSENIC | 4.80 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | BERYLLIUM | | 1.00 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | CADMIUM | | .31 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | CHROMIUM | 21.00 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | COPPER | 18.40 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | CYANIDE | | .35 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | LEAD | 10.70 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | MERCURY | 1.80 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | NICKEL | | 9.60 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | SELENIUM | | .64 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | SILVER | | .31 | R | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | THALLIUM | | 1.66 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD06 | ZINC | 71.70 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | ANTIMONY | | 3.63 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | ARSENIC | 1.30 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | BERYLLIUM | | .40 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | CADMIUM | | .27 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGOD17 | CHROMIUM | 9.30 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | COPPER | 4.00 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | CYANIDE | | .27 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | LEAD | 5.30 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | MERCURY | .87 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | NICKEL | | 7.50 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | SELENIUM | | .31 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | SILVER | | .23 | R | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | THALLIUM | | 1.23 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | ZINC | 89.90 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | ANTIMONY | | 3.85 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | ARSENIC | 3.30 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | BERYLLIUM | | .39 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | CADMIUM | | .28 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | CHROMIUM | 10.30 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | COPPER | 4.60 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | CYANIDE | | .27 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | LEAD | 4.60 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | MERCURY | .59 | | J | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | NICKEL | | 10.70 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | SELENIUM | | .30 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | SILVER | | .24 | R | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | THALLIUM | | 1.20 | U | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | ZINC | 80.20 | | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | ANTIMONY | | 4.04 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | ARSENIC | 5.40 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | BERYLLIUM | | .65 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | CADMIUM | | .25 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | CHROMIUM | 14.40 | | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | COPPER | 5.10 | | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | CYANIDE | .34 | | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | LEAD | 11.60 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | MERCURY | .41 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | NICKEL | | 9.50 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | SELENIUM | | .42 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | SILVER | | .25 | R | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | THALLIUM | | 1.44 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | ZINC | 68.90 | | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGDD01 | ANTIMONY | | 6.23 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | ARSENIC | 16.10 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | BERYLLIUM | 3.70 | | | 8/28/91 | SED GRAB | DISCHARGE DITCH |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGDD01 | CADMIUM | | .78 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | CHROMIUM | 26.70 | | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | COPPER | 19.00 | | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | CYANIDE | | .52 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | LEAD | 13.10 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | MERCURY | 3.00 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | NICKEL | | 27.90 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | SELENIUM | | .65 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | SILVER | | .39 | R | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | THALLIUM | | 2.19 | U | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD01 | ZINC | 192.00 | | | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC302 | ANTIMONY | | 4.98 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | ARSENIC | 4.20 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | BERYLLIUM | | .64 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | CADMIUM | | .31 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | CHROMIUM | 27.10 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | COPPER | 13.10 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | CYANIDE | | .35 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | LEAD | 16.10 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | MERCURY | 26.80 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | NICKEL | | 10.00 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | SELENIUM | | .58 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | SILVER | | .31 | R | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | THALLIUM | | 1.50 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC302 | ZINC | 47.10 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | ANTIMONY | | 5.57 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | ARSENIC | 3.30 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | BERYLLIUM | | .96 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | CADMIUM | | .35 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | CHROMIUM | 35.20 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | COPPER | 8.90 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | CYANIDE | | .39 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | LEAD | 18.70 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | MERCURY | 12.20 | | J | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | NICKEL | | 10.80 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | SELENIUM | | .59 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | SILVER | | .49 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | THALLIUM | | 1.93 | U | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | ZINC | 41.10 | | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SGBD05 | ANTIMONY | | 11.62 | R | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | ARSENIC | 4.10 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |

SELECTED TAL CONSTITUENTS. SEDIMENT RESULTS
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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGBD05 | BERYLLIUM | | 2.10 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | CADMIUM | | .73 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | CHROMIUM | 39.20 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | COPPER | 17.30 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | CYANIDE | .78 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | LEAD | 19.30 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | MERCURY | 3.70 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | NICKEL | | 25.20 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | SELENIUM | | .94 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | SILVER | | .73 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | THALLIUM | | 3.76 | R | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD05 | ZINC | 116.00 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | ANTIMONY | 10.10 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | ARSENIC | 3.20 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | BERYLLIUM | | 2.30 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | CADMIUM | | .61 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | CHROMIUM | 18.50 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | COPPER | 12.50 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | CYANIDE | | .48 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | LEAD | 11.20 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | MERCURY | 4.30 | | | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | NICKEL | | 20.30 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | SELENIUM | | .79 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | SILVER | | .61 | U | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | THALLIUM | | 3.17 | R | 8/20/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD06 | ZINC | 89.00 | | J | 8/20/91 | SED GRAB | FRMR DISCH DTCH |

ELUTRIATE MERCURY SEDIMENT RESULTS
ALL UNITS ARE MG/L

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC102 | ELUTRIATE MERC | | .0002 | ND | 8/23/91 | SED CORE | BASIN |
| SCC104 | ELUTRIATE MERC | .153 | .0002 | | 8/23/91 | SED CORE | BASIN |
| SCC202 | ELUTRIATE MERC | | .0002 | ND | 8/23/91 | SED CORE | BASIN |
| SCC204 | ELUTRIATE MERC | .153 | .0002 | | 8/23/91 | SED CORE | BASIN |
| SGC05 | ELUTRIATE MERC | | .0002 | ND | 8/13/91 | SED GRAB | BASIN |
| SGC06 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGC06DUP | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGC10 | ELUTRIATE MERC | | .0002 | ND | 8/08/91 | SED GRAB | BASIN |
| SGD06 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGD10 | ELUTRIATE MERC | | .0002 | ND | 8/08/91 | SED GRAB | BASIN |
| SGF07 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGG03 | ELUTRIATE MERC | | .0002 | ND | 8/13/91 | SED GRAB | BASIN |
| SGG08 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGG09 | ELUTRIATE MERC | | .0002 | ND | 8/09/91 | SED GRAB | BASIN |
| SGH04 | ELUTRIATE MERC | | .0002 | ND | 8/13/91 | SED GRAB | BASIN |
| SGH08 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |

ELUTRIATE MERCURY SEDIMENT RESULTS
ALL UNITS ARE MG/L

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGI10 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGJ06 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGJ07 | ELUTRIATE MERC | | .0002 | ND | 8/11/91 | SED GRAB | BASIN |
| SGK04 | ELUTRIATE MERC | | .0002 | ND | 8/13/91 | SED GRAB | BASIN |
| SGOD06 | ELUTRIATE MERC | | .0002 | ND | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17 | ELUTRIATE MERC | .012 | .0002 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD17DUP | ELUTRIATE MERC | .016 | .0002 | | 8/28/91 | SED GRAB | OUTFALL DITCH |
| SGOD20 | ELUTRIATE MERC | .012 | .0002 | | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGDD01 | ELUTRIATE MERC | | .0002 | ND | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC302 | ELUTRIATE MERC | .114 | .0002 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| SCC304 | ELUTRIATE MERC | .237 | .0002 | | 8/27/91 | SED CORE | FRMR DISCH DTCH |
| RS02 | ELUTRIATE MERC | | .0002 | ND | 8/26/91 | SEDIMENT | RESID SAMP |

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TAL MERCURY SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SCC101 | MERCURY | 157.00 | | J | 8/23/91 | SED CORE | BASIN |
| SCC103 | MERCURY | .52 | | J | 8/23/91 | SED CORE | BASIN |
| SCC105 | MERCURY | | .25 | U | 8/23/91 | SED CORE | BASIN |
| SCC201 | MERCURY | 135.00 | | J | 8/23/91 | SED CORE | BASIN |
| SCC203 | MERCURY | 42.60 | | J | 8/23/91 | SED CORE | BASIN |
| SCC205 | MERCURY | 33.20 | | J | 8/23/91 | SED CORE | BASIN |
| SGA07 | MERCURY | .34 | | J | 8/13/91 | SED GRAB | BASIN |
| SGB04 | MERCURY | 21.60 | | J | 8/14/91 | SED GRAB | BASIN |
| SGB04DUP | MERCURY | 62.90 | | J | 8/14/91 | SED GRAB | BASIN |
| SGB05 | MERCURY | 246.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGB06 | MERCURY | 57.80 | | J | 8/13/91 | SED GRAB | BASIN |
| SGB07 | MERCURY | 84.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGB08 | MERCURY | 10.20 | | J | 8/13/91 | SED GRAB | BASIN |
| SGB09 | MERCURY | 13.70 | | J | 8/10/91 | SED GRAB | BASIN |
| SGB10 | MERCURY | | .19 | U | 8/09/91 | SED GRAB | BASIN |
| SGC04 | MERCURY | 17.00 | | J | 8/14/91 | SED GRAB | BASIN |
| SGC07 | MERCURY | 21.30 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC07DUP | MERCURY | 24.80 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC08 | MERCURY | 18.80 | | J | 8/13/91 | SED GRAB | BASIN |
| SGC09 | MERCURY | 9.80 | | J | 8/10/91 | SED GRAB | BASIN |
| SGD03 | MERCURY | 128.00 | | J | 8/14/91 | SED GRAB | BASIN |
| SGD04 | MERCURY | 18.10 | | J | 8/14/91 | SED GRAB | BASIN |
| SGD05 | MERCURY | 26.20 | | J | 8/13/91 | SED GRAB | BASIN |
| SGD07 | MERCURY | 12.90 | | J | 8/13/91 | SED GRAB | BASIN |
| SGD08 | MERCURY | 18.40 | | J | 8/13/91 | SED GRAB | BASIN |
| SGD09 | MERCURY | 10.70 | | J | 8/10/91 | SED GRAB | BASIN |
| SGD11 | MERCURY | 15.60 | | J | 8/13/91 | SED GRAB | BASIN |
| SGE02 | MERCURY | 17.40 | | J | 8/14/91 | SED GRAB | BASIN |
| SGE03 | MERCURY | 9.30 | | J | 8/14/91 | SED GRAB | BASIN |
| SGE04 | MERCURY | 3.20 | | J | 8/14/91 | SED GRAB | BASIN |
| SGE05 | MERCURY | 97.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGE06 | MERCURY | 17.10 | | J | 8/13/91 | SED GRAB | BASIN |
| SGE07 | MERCURY | 22.60 | | J | 8/13/91 | SED GRAB | BASIN |
| SGE08 | MERCURY | 17.40 | | J | 8/13/91 | SED GRAB | BASIN |
| SGE09 | MERCURY | 7.80 | | J | 8/10/91 | SED GRAB | BASIN |
| SGE10 | MERCURY | 8.00 | | J | 8/09/91 | SED GRAB | BASIN |
| SGF01 | MERCURY | 3.10 | | J | 8/14/91 | SED GRAB | BASIN |
| SGF02 | MERCURY | 27.40 | | J | 8/14/91 | SED GRAB | BASIN |
| SGF03 | MERCURY | 3.70 | | J | 8/14/91 | SED GRAB | BASIN |
| SGF04 | MERCURY | 12.50 | | J | 8/14/91 | SED GRAB | BASIN |
| SGF05 | MERCURY | 66.30 | | J | 8/13/91 | SED GRAB | BASIN |
| SGF06 | MERCURY | 79.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGF08 | MERCURY | 4.40 | | J | 8/09/91 | SED GRAB | BASIN |
| SGF09 | MERCURY | 8.70 | | J | 8/09/91 | SED GRAB | BASIN |
| SGF10 | MERCURY | 25.40 | | J | 8/09/91 | SED GRAB | BASIN |
| SGF10DUP | MERCURY | 28.40 | | J | 8/09/91 | SED GRAB | BASIN |
| SGG01 | MERCURY | 5.30 | | J | 8/14/91 | SED GRAB | BASIN |
| SGG02 | MERCURY | 26.50 | | J | 8/14/91 | SED GRAB | BASIN |
| SGG04 | MERCURY | 90.00 | | J | 8/14/91 | SED GRAB | BASIN |

TAL MERCURY SEDIMENT RESULTS
ALL UNITS ARE MG/KG

3 8 1117

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGG05 | MERCURY | 24.60 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG06 | MERCURY | 63.70 | | J | 8/13/91 | SED GRAB | BASIN |
| SGG07 | MERCURY | 29.50 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH02 | MERCURY | 27.40 | | J | 8/14/91 | SED GRAB | BASIN |
| SGH03 | MERCURY | 80.80 | | J | 8/14/91 | SED GRAB | BASIN |
| SGH05 | MERCURY | 6.80 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH06 | MERCURY | 200.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH07 | MERCURY | 26.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGH09 | MERCURY | 25.20 | | J | 8/10/91 | SED GRAB | BASIN |
| SGH10 | MERCURY | .39 | | J | 8/13/91 | SED GRAB | BASIN |
| SGI03 | MERCURY | 77.20 | | J | 8/14/91 | SED GRAB | BASIN |
| SGI04 | MERCURY | 116.00 | | J | 8/14/91 | SED GRAB | BASIN |
| SGI05 | MERCURY | 13.10 | | J | 8/13/91 | SED GRAB | BASIN |
| SGI06 | MERCURY | 137.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGI07 | MERCURY | 227.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGI08 | MERCURY | 29.00 | | J | 8/13/91 | SED GRAB | BASIN |
| SGI09 | MERCURY | 14.80 | | J | 8/10/91 | SED GRAB | BASIN |
| SGJ03 | MERCURY | 20.20 | | J | 8/14/91 | SED GRAB | BASIN |
| SGJ04 | MERCURY | 14.80 | | J | 8/14/91 | SED GRAB | BASIN |
| SGJ05 | MERCURY | 9.80 | | J | 8/13/91 | SED GRAB | BASIN |
| SGJ09 | MERCURY | 30.90 | | J | 8/10/91 | SED GRAB | BASIN |
| SGK05 | MERCURY | 1.30 | | J | 8/14/91 | SED GRAB | BASIN |
| SGOD01 | MERCURY | .30 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD02 | MERCURY | .13 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD03 | MERCURY | 1.00 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD04 | MERCURY | .19 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD05 | MERCURY | .88 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD07 | MERCURY | | .16 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD08 | MERCURY | 1.10 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD09 | MERCURY | .92 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD10 | MERCURY | | .16 | U | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD11 | MERCURY | 10.40 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD12 | MERCURY | 9.70 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD13 | MERCURY | .31 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD14 | MERCURY | .48 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD15 | MERCURY | 4.90 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD16 | MERCURY | .82 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD18 | MERCURY | .39 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD19 | MERCURY | .58 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD21 | MERCURY | .48 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD22 | MERCURY | .49 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGOD23 | MERCURY | .12 | | J | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SGOD24 | MERCURY | .34 | | J | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SGOD24DUP | MERCURY | 2.00 | | J | 8/30/91 | SED GRAB | OUTFALL DITCH |
| SGOD25 | MERCURY | 115.00 | | J | 8/29/91 | SED GRAB | OUTFALL DITCH |
| SGDD02 | MERCURY | 4.20 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |

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TAL MERCURY SEDIMENT RESULTS
ALL UNITS ARE MG/KG

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | LOCATION |
|---|---|---|---|---|---|---|---|
| SGDD02DUP | MERCURY | 4.40 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SGDD03 | MERCURY | 2.20 | | J | 8/29/91 | SED GRAB | DISCHARGE DITCH |
| SGDD04 | MERCURY | .28 | | J | 8/28/91 | SED GRAB | DISCHARGE DITCH |
| SCC301 | MERCURY | 1.80 | | J | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303 | MERCURY | 44.60 | | J | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC303DUP | MERCURY | 38.10 | | J | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SCC305 | MERCURY | | .15 | U | 8/28/91 | SED CORE | FRMR DISCH DTCH |
| SGBD01 | MERCURY | 4.80 | | J | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD02 | MERCURY | 3.90 | | J | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD03 | MERCURY | 5.80 | | J | 8/29/91 | SED GRAB | FRMR DISCH DTCH |
| SGBD04 | MERCURY | 4.50 | | J | 8/29/91 | SED GRAB | FRMR DISCH DTCH |

3 8 1119

# SURFACE WATER DATA

# SUMMARY TABLES

CLP VOLATILE SURFACE WATER RESULTS
(UNITS ARE UG/L)

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|
| WGOD25 | CHLOROFORM | 3 | 8/30/91 | WATER |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN

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* SUMMARY TABLE *

CLP SEMIVOLATILE SURFACE WATER RESULTS
(UNITS ARE UG/L)

3 8 1121

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED QUANTITATION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|---|

--NO SAMPLES SHOWED CONCENTRATIONS ABOVE THE DETECTION LIMIT--

FILE: \SWSE.R1

* SUMMARY TABLE *


CLP PESTICIDE/PCB SURFACE WATER RESULTS
(UNITS ARE UG/L)

3 8 1122

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|
| WGDD02 | ALPHA-BHC | .180 | | 8/30/91 | WATER |
| WGOD25 | ALPHA-BHC | .220 | | 8/30/91 | WATER |

NOTE: ONLY RESULTS WITH CONCENTRATIONS ABOVE THE VALIDATED QUANTITATION LIMIT ARE SHOWN

FILE: \SUMPE

LABORATORY CONVENTIONAL PARAMETER RESULTS

SURFACE WATER
UNITS ARE MG/L

3 8 1123

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|---|
| WGBD03 | CHLORIDE | 39.2 | | | 8/30/91 | WATER |
| WGBD03 | TDS | 222.0 | | | 8/30/91 | WATER |
| WGBD03 | TOC | 10.6 | | | 8/30/91 | WATER |
| WGBD03 | TSS | 42.0 | | | 8/30/91 | WATER |
| WGC901 | CHLORIDE | 450.0 | | | 8/29/91 | WATER |
| WGC901 | TDS | 1460.0 | | | 8/29/91 | WATER |
| WGC901 | TOC | 6.4 | | | 8/29/91 | WATER |
| WGC901 | TSS | | 8 | ND | 8/29/91 | WATER |
| WGC902 | CHLORIDE | 439.0 | | | 8/29/91 | WATER |
| WGC902 | TDS | 1880.0 | | | 8/29/91 | WATER |
| WGC902 | TOC | 5.8 | | | 8/29/91 | WATER |
| WGC902 | TSS | 14.0 | | | 8/29/91 | WATER |
| WGDD02 | CHLORIDE | 94.8 | | | 8/30/91 | WATER |
| WGDD02 | TDS | 10500.0 | | | 8/30/91 | WATER |
| WGDD02 | TOC | 4.8 | | | 8/30/91 | WATER |
| WGDD02 | TSS | 26.0 | | | 8/30/91 | WATER |
| WGF201 | CHLORIDE | 436.0 | | | 8/29/91 | WATER |
| WGF201 | TDS | 924.0 | | | 8/29/91 | WATER |
| WGF201 | TOC | 15.8 | | | 8/29/91 | WATER |
| WGF201 | TSS | 40.0 | | | 8/29/91 | WATER |
| WGG601 | CHLORIDE | 428.0 | | | 8/30/91 | WATER |
| WGG601 | TDS | 794.0 | | | 8/30/91 | WATER |
| WGG601 | TOC | 6.7 | | | 8/30/91 | WATER |
| WGG601 | TSS | 14.0 | | | 8/30/91 | WATER |
| WGG601DUP | CHLORIDE | 455.0 | | | 8/30/91 | WATER |
| WGG601DUP | TDS | 1870.0 | | | 8/30/91 | WATER |
| WGG601DUP | TOC | 6.7 | | | 8/30/91 | WATER |
| WGG601DUP | TSS | 12.0 | | | 8/30/91 | WATER |
| WGG602 | CHLORIDE | 448.0 | | | 8/30/91 | WATER |
| WGG602 | TDS | 586.0 | | | 8/30/91 | WATER |
| WGG602 | TOC | 5.9 | | | 8/30/91 | WATER |
| WGG602 | TSS | | 8 | ND | 8/30/91 | WATER |
| WGH501 | CHLORIDE | 437.0 | | | 8/30/91 | WATER |

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LABORATORY CONVENTIONAL PARAMETER RESULTS

SURFACE WATER
UNITS ARE MG/L

3 8 1124

| SAMPLE ID | PARAMETER | CONCENTRATION | DETECTION LIMIT | LABORATORY QUALIFIER | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|---|
| WGH501 | TDS | 708.0 | | | 8/30/91 | WATER |
| WGH501 | TOC | 6.1 | | | 8/30/91 | WATER |
| WGH501 | TSS | 16.0 | | | 8/30/91 | WATER |
| WGH502 | CHLORIDE | 439.0 | | | 8/30/91 | WATER |
| WGH502 | TDS | 1060.0 | | | 8/30/91 | WATER |
| WGH502 | TOC | 8.9 | | | 8/30/91 | WATER |
| WGH502 | TSS | 30.0 | | | 8/30/91 | WATER |
| WGH901 | CHLORIDE | 434.0 | | | 8/29/91 | WATER |
| WGH901 | TDS | 1860.0 | | | 8/29/91 | WATER |
| WGH901 | TOC | 8.3 | | | 8/29/91 | WATER |
| WGH901 | TSS | 18.0 | | | 8/29/91 | WATER |
| WGH902 | CHLORIDE | 434.0 | | | 8/29/91 | WATER |
| WGH902 | TDS | 1640.0 | | | 8/29/91 | WATER |
| WGH902 | TOC | 5.6 | | | 8/29/91 | WATER |
| WGH902 | TSS | 18.0 | | | 8/29/91 | WATER |
| WGOO25 | CHLORIDE | 5900.0 | | | 8/30/91 | WATER |
| WGOO25 | TDS | 12100.0 | | | 8/30/91 | WATER |
| WGOO25 | TOC | 4.7 | | | 8/30/91 | WATER |
| WGOO25 | TSS | 12.0 | | | 8/30/91 | WATER |

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FIELD CONVENTIONAL PARAMETER RESULTS SURFACE WATER

3 8 1 1 2 5

| SAMPLE ID | PARAMETER | VALUE | UNITS | DATE SAMPLED | SAMPLE TYPE | |
|---|---|---|---|---|---|---|
| WGBD03 | CONDUCTIVITY | 446.00 | UMHOS/CM | 8/30/91 | WATER | |
| WGBD03 | DISSOLVED OXY | 8.00 | MG/L | 8/30/91 | WATER | |
| WGBD03 | DISSOLVED OXY | 180.00 | % | 8/30/91 | WATER | |
| WGBD03 | PH | 7.00 | | 8/30/91 | WATER | |
| WGBD03 | TEMP | 35.60 | o C | 8/30/91 | WATER | |
| WGBD03 | WATER DEPTH | .50 | FT | 8/30/91 | WATER | |
| WGC901 | CONDUCTIVITY | | UMHOS/CM | 8/29/91 | WATER | NOT ANALYZED |
| WGC901 | DISSOLVED OXY | 5.00 | MG/L | 8/29/91 | WATER | |
| WGC901 | DISSOLVED OXY | 62.00 | % | 8/29/91 | WATER | |
| WGC901 | PH | 7.20 | | 8/29/91 | WATER | |
| WGC901 | TEMP | 28.60 | o C | 8/29/91 | WATER | |
| WGC901 | WATER DEPTH | 3.00 | FT | 8/29/91 | WATER | |
| WGC902 | CONDUCTIVITY | 2190.00 | UMHOS/CM | 8/29/91 | WATER | |
| WGC902 | DISSOLVED OXY | 3.10 | MG/L | 8/29/91 | WATER | |
| WGC902 | DISSOLVED OXY | 40.00 | % | 8/29/91 | WATER | |
| WGC902 | PH | 7.07 | | 8/29/91 | WATER | |
| WGC902 | TEMP | 28.50 | o C | 8/29/91 | WATER | |
| WGC902 | WATER DEPTH | 9.00 | FT | 8/29/91 | WATER | |
| WGDD02 | CONDUCTIVITY | 22700.00 | UMHOS/CM | 8/30/91 | WATER | |
| WGDD02 | DISSOLVED OXY | 7.60 | MG/L | 8/30/91 | WATER | |
| WGDD02 | DISSOLVED OXY | 106.00 | % | 8/30/91 | WATER | |
| WGDD02 | PH | 7.66 | | 8/30/91 | WATER | |
| WGDD02 | TEMP | 31.40 | o C | 8/30/91 | WATER | |
| WGDD02 | WATER DEPTH | .50 | FT | 8/30/91 | WATER | |
| WGF201 | CONDUCTIVITY | 2000.00 | UMHOS/CM | 8/29/91 | WATER | |
| WGF201 | DISSOLVED OXY | 10.50 | MG/L | 8/29/91 | WATER | |
| WGF201 | DISSOLVED OXY | 140.00 | % | 8/29/91 | WATER | |
| WGF201 | PH | 8.79 | | 8/29/91 | WATER | |
| WGF201 | TEMP | 34.90 | o C | 8/29/91 | WATER | |
| WGF201 | WATER DEPTH | .50 | FT | 8/29/91 | WATER | |
| WGG601 | CONDUCTIVITY | 1938.00 | UMHOS/CM | 8/30/91 | WATER | |
| WGG601 | DISSOLVED OXY | 6.40 | MG/L | 8/30/91 | WATER | |
| WGG601 | DISSOLVED OXY | 80.00 | % | 8/30/91 | WATER | |
| WGG601 | PH | 7.66 | | 8/30/91 | WATER | |
| WGG601 | TEMP | 28.70 | o C | 8/30/91 | WATER | |
| WGG601 | WATER DEPTH | 1.00 | FT | 8/30/91 | WATER | |
| WGG601DUP | CONDUCTIVITY | 1938.00 | UMHOS/CM | 8/30/91 | WATER | |

FIELD CONVENTIONAL PARAMETER RESULTS SURFACE WATER

3 8 1126

| SAMPLE ID | PARAMETER | VALUE | UNITS | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|
| WGG601DUP | DISSOLVED OXY | 6.40 | MG/L | 8/30/91 | WATER |
| WGG601DUP | DISSOLVED OXY | 80.00 | % | 8/30/91 | WATER |
| WGG601DUP | PH | 7.66 | | 8/30/91 | WATER |
| WGG601DUP | TEMP | 28.70 | o C | 8/30/91 | WATER |
| WGG601DUP | WATER DEPTH | 1.00 | FT | 8/30/91 | WATER |
| WGG602 | CONDUCTIVITY | 2060.00 | UMHOS/CM | 8/30/91 | WATER |
| WGG602 | DISSOLVED OXY | 6.00 | MG/L | 8/30/91 | WATER |
| WGG602 | DISSOLVED OXY | 73.00 | % | 8/30/91 | WATER |
| WGG602 | PH | 7.25 | | 8/30/91 | WATER |
| WGG602 | TEMP | 28.70 | o C | 8/30/91 | WATER |
| WGG602 | WATER DEPTH | 5.00 | FT | 8/30/91 | WATER |
| WGH501 | CONDUCTIVITY | 2030.00 | UMHOS/CM | 8/30/91 | WATER |
| WGH501 | DISSOLVED OXY | 6.30 | MG/L | 8/30/91 | WATER |
| WGH501 | DISSOLVED OXY | 83.00 | % | 8/30/91 | WATER |
| WGH501 | PH | 7.60 | | 8/30/91 | WATER |
| WGH501 | TEMP | 28.90 | o C | 8/30/91 | WATER |
| WGH501 | WATER DEPTH | 1.00 | FT | 8/30/91 | WATER |
| WGH502 | CONDUCTIVITY | 2090.00 | UMHOS/CM | 8/30/91 | WATER |
| WGH502 | DISSOLVED OXY | 5.20 | MG/L | 8/30/91 | WATER |
| WGH502 | DISSOLVED OXY | 64.00 | % | 8/30/91 | WATER |
| WGH502 | PH | 7.66 | | 8/30/91 | WATER |
| WGH502 | TEMP | [illegible].0[illegible] | o C | 8/30/91 | WATER |
| WGH502 | WATER DEPTH | 4.00 | FT | 8/30/91 | WATER |
| WGH901 | CONDUCTIVITY | 2130.00 | UMHOS/CM | 8/29/91 | WATER |
| WGH901 | DISSOLVED OXY | 6.50 | MG/L | 8/29/91 | WATER |
| WGH901 | DISSOLVED OXY | 84.00 | % | 8/29/91 | WATER |
| WGH901 | PH | 7.84 | | 8/29/91 | WATER |
| WGH901 | TEMP | 29.20 | o C | 8/29/91 | WATER |
| WGH901 | WATER DEPTH | 1.00 | FT | 8/29/91 | WATER |
| WGH902 | CONDUCTIVITY | 2190.00 | UMHOS/CM | 8/29/91 | WATER |
| WGH902 | DISSOLVED OXY | 6.40 | MG/L | 8/29/91 | WATER |
| WGH902 | DISSOLVED OXY | 81.00 | % | 8/29/91 | WATER |
| WGH902 | PH | 7.12 | | 8/29/91 | WATER |
| WGH902 | TEMP | 29.30 | o C | 8/29/91 | WATER |
| WGH902 | WATER DEPTH | 5.00 | FT | 8/29/91 | WATER |
| WGOO25 | CONDUCTIVITY | 23200.00 | UMHOS/CM | 8/30/91 | WATER |
| WGOO25 | DISSOLVED OXY | 8.00 | MG/L | 8/30/91 | WATER |
| WGOO25 | DISSOLVED OXY | 107.00 | % | 8/30/91 | WATER |

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FIELD CONVENTIONAL PARAMETER RESULTS SURFACE WATER

3 8 1127

| SAMPLE ID | PARAMETER | VALUE | UNITS | DATE SAMPLED | SAMPLE TYPE |
|---|---|---|---|---|---|
| WGOD25 | PH | 7.76 | | 8/30/91 | WATER |
| WGOD25 | TEMP | 30.10 | o C | 8/30/91 | WATER |
| WGOD25 | WATER DEPTH | 1.00 | FT | 8/30/91 | WATER |

SURFACE WATER RESULTS
SELECTED TAL METALS
(UNITS ARE UG/L)



3 8 1128

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGBD03 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | BERYLLIUM | | 2.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | CHROMIUM | 174.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | COPPER | | 10.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | NICKEL | 101.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | SILVER | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGBD03 | ZINC | | 8.60 | U | 8/30/91 | WATER | DISSOLVED |
| WGC901 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | ARSENIC | 3.40 | | | 8/29/91 | WATER | DISSOLVED |
| WGC901 | BERYLLIUM | | 2.20 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | CHROMIUM | 7.30 | | J | 8/29/91 | WATER | DISSOLVED |
| WGC901 | COPPER | | 8.70 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | LEAD | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | MERCURY | | .20 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | NICKEL | 14.70 | | J | 8/29/91 | WATER | DISSOLVED |
| WGC901 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | SILVER | | 2.40 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC901 | ZINC | 80.10 | | | 8/29/91 | WATER | DISSOLVED |
| WGC902 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | BERYLLIUM | | 2.20 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | CHROMIUM | 5.70 | | J | 8/29/91 | WATER | DISSOLVED |
| WGC902 | COPPER | | 6.90 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | LEAD | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | MERCURY | | .20 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | NICKEL | 14.10 | | J | 8/29/91 | WATER | DISSOLVED |
| WGC902 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | SILVER | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGC902 | ZINC | | 36.90 | U | 8/29/91 | WATER | DISSOLVED |
| WGDD02 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | BERYLLIUM | | 2.30 | U | 8/30/91 | WATER | DISSOLVED |

3 8 1129

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGDD02 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | CHROMIUM | 136.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | COPPER | | 11.40 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | NICKEL | 81.90 | | J | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | SELENIUM | | 4.90 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | SILVER | | 3.70 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGDD02 | ZINC | | 11.50 | U | 8/30/91 | WATER | DISSOLVED |
| WGF201 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | BERYLLIUM | | 2.30 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | CHROMIUM | 4.10 | | J | 8/29/91 | WATER | DISSOLVED |
| WGF201 | COPPER | | 3.80 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | LEAD | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | MERCURY | | .20 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | NICKEL | | | R | 8/29/91 | WATER | DISSOLVED |
| WGF201 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | SILVER | | 3.20 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGF201 | ZINC | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGG601 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | BERYLLIUM | | 2.30 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | CHROMIUM | 138.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG601 | COPPER | | 12.30 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | NICKEL | 98.40 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG601 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | SILVER | | 2.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601 | ZINC | 94.10 | | | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | BERYLLIUM | | 2.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | CHROMIUM | 32.80 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | COPPER | | 6.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |

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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGG601DUP | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | NICKEL | 30.70 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | SILVER | | | R | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG601DUP | ZINC | 65.40 | | | 8/30/91 | WATER | DISSOLVED |
| WGG602 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | BERYLLIUM | | 2.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | CHROMIUM | 23.80 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG602 | COPPER | | 6.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | NICKEL | 35.80 | | J | 8/30/91 | WATER | DISSOLVED |
| WGG602 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | SILVER | | 2.30 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGG602 | ZINC | | 42.10 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | BERYLLIUM | | 2.20 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | CHROMIUM | 882.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGH501 | COPPER | 33.60 | | | 8/30/91 | WATER | DISSOLVED |
| WGH501 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | NICKEL | 616.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGH501 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | SILVER | | 5.40 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH501 | ZINC | | 43.80 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | BERYLLIUM | | 2.30 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | CHROMIUM | 207.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGH502 | COPPER | | 10.40 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | MERCURY | | .20 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | NICKEL | 136.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGH502 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | SILVER | | | R | 8/30/91 | WATER | DISSOLVED |

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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGH502 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGH502 | ZINC | | 22.70 | U | 8/30/91 | WATER | DISSOLVED |
| WGH901 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | BERYLLIUM | | 2.30 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | CHROMIUM | 6.00 | | J | 8/29/91 | WATER | DISSOLVED |
| WGH901 | COPPER | | 4.50 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | LEAD | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | MERCURY | | .20 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | NICKEL | 11.20 | | J | 8/29/91 | WATER | DISSOLVED |
| WGH901 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | SILVER | | 2.30 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH901 | ZINC | | 4.90 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | BERYLLIUM | | 2.20 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | CHROMIUM | | 4.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | COPPER | | 5.40 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | LEAD | | 3.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | MERCURY | | .20 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | NICKEL | | | R | 8/29/91 | WATER | DISSOLVED |
| WGH902 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | SILVER | | 4.40 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | DISSOLVED |
| WGH902 | ZINC | | 23.90 | U | 8/29/91 | WATER | DISSOLVED |
| WGO025 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | ARSENIC | 8.80 | | J | 8/30/91 | WATER | DISSOLVED |
| WGO025 | BERYLLIUM | | 2.70 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | CHROMIUM | 140.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGO025 | COPPER | | 14.50 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | LEAD | | 3.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | MERCURY | .65 | | | 8/30/91 | WATER | DISSOLVED |
| WGO025 | NICKEL | 117.00 | | J | 8/30/91 | WATER | DISSOLVED |
| WGO025 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | SILVER | | 6.30 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | DISSOLVED |
| WGO025 | ZINC | 253.00 | | | 8/30/91 | WATER | DISSOLVED |

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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGBD03 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | BERYLLIUM | | 1.70 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | CHROMIUM | 8.50 | | J | 8/30/91 | WATER | TOTAL |
| WGBD03 | COPPER | | 9.20 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | CYANIDE | 14.60 | | | 8/30/91 | WATER | TOTAL |
| WGBD03 | LEAD | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | MERCURY | 1.10 | | | 8/30/91 | WATER | TOTAL |
| WGBD03 | NICKEL | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGBD03 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGBD03 | ZINC | 98.80 | | J | 8/30/91 | WATER | TOTAL |
| WGC901 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | BERYLLIUM | | 2.50 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | CHROMIUM | | 4.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | COPPER | | 8.70 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | CYANIDE | | 10.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | LEAD | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | MERCURY | .26 | | | 8/29/91 | WATER | TOTAL |
| WGC901 | NICKEL | 12.20 | | | 8/29/91 | WATER | TOTAL |
| WGC901 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | SILVER | | | R | 8/29/91 | WATER | TOTAL |
| WGC901 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | TOTAL |
| WGC901 | ZINC | 88.10 | | J | 8/29/91 | WATER | TOTAL |
| WGC902 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | BERYLLIUM | | 2.50 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | CHROMIUM | | 4.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | COPPER | | 9.50 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | CYANIDE | 28.00 | | | 8/29/91 | WATER | TOTAL |
| WGC902 | LEAD | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | MERCURY | .45 | | | 8/29/91 | WATER | TOTAL |
| WGC902 | NICKEL | 21.00 | | | 8/29/91 | WATER | TOTAL |
| WGC902 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | SILVER | | | R | 8/29/91 | WATER | TOTAL |
| WGC902 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | TOTAL |
| WGC902 | ZINC | 86.50 | | J | 8/29/91 | WATER | TOTAL |
| WGDD02 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |

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| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGDD02 | ARSENIC | 6.70 | | | 8/30/91 | WATER | TOTAL |
| WGDD02 | BERYLLIUM | | 2.10 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | CHROMIUM | 7.80 | | J | 8/30/91 | WATER | TOTAL |
| WGDD02 | COPPER | | 14.40 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | CYANIDE | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | LEAD | 3.80 | | J | 8/30/91 | WATER | TOTAL |
| WGDD02 | MERCURY | 2.80 | | | 8/30/91 | WATER | TOTAL |
| WGDD02 | NICKEL | 23.00 | | | 8/30/91 | WATER | TOTAL |
| WGDD02 | SELENIUM | | 6.00 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | SILVER | | 2.90 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGDD02 | ZINC | 215.00 | | J | 8/30/91 | WATER | TOTAL |
| WGF201 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | BERYLLIUM | | 1.80 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | CHROMIUM | 4.30 | | J | 8/29/91 | WATER | TOTAL |
| WGF201 | COPPER | | 7.80 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | CYANIDE | 32.40 | | | 8/29/91 | WATER | TOTAL |
| WGF201 | LEAD | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | MERCURY | 1.50 | | | 8/29/91 | WATER | TOTAL |
| WGF201 | NICKEL | | 10.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | SILVER | | 5.80 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | TOTAL |
| WGF201 | ZINC | 111.00 | | J | 8/29/91 | WATER | TOTAL |
| WGG601 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | BERYLLIUM | | 1.70 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | CHROMIUM | | 4.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | COPPER | | 7.90 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | CYANIDE | 36.90 | | | 8/30/91 | WATER | TOTAL |
| WGG601 | LEAD | 3.50 | | J | 8/30/91 | WATER | TOTAL |
| WGG601 | MERCURY | 1.10 | | | 8/30/91 | WATER | TOTAL |
| WGG601 | NICKEL | 10.80 | | | 8/30/91 | WATER | TOTAL |
| WGG601 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGG601 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601 | ZINC | | 39.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGG601DUP | BERYLLIUM | | 1.70 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | CHROMIUM | 4.50 | | J | 8/30/91 | WATER | TOTAL |
| WGG601DUP | COPPER | | 8.70 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | CYANIDE | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | LEAD | 3.40 | | J | 8/30/91 | WATER | TOTAL |
| WGG601DUP | MERCURY | .98 | | | 8/30/91 | WATER | TOTAL |
| WGG601DUP | NICKEL | 10.20 | | | 8/30/91 | WATER | TOTAL |
| WGG601DUP | SELENIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | SILVER | | 2.20 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGG601DUP | ZINC | 121.00 | | J | 8/30/91 | WATER | TOTAL |
| WGG602 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | BERYLLIUM | | 1.80 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | CHROMIUM | 5.60 | | J | 8/30/91 | WATER | TOTAL |
| WGG602 | COPPER | | 12.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | CYANIDE | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | LEAD | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | MERCURY | .83 | | | 8/30/91 | WATER | TOTAL |
| WGG602 | NICKEL | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGG602 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGG602 | ZINC | 166.00 | | J | 8/30/91 | WATER | TOTAL |
| WGH501 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | BERYLLIUM | | 2.40 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | CADMIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | CHROMIUM | 4.30 | | J | 8/30/91 | WATER | TOTAL |
| WGH501 | COPPER | | 9.10 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | CYANIDE | 13.50 | | | 8/30/91 | WATER | TOTAL |
| WGH501 | LEAD | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | MERCURY | 1.50 | | | 8/30/91 | WATER | TOTAL |
| WGH501 | NICKEL | 10.20 | | | 8/30/91 | WATER | TOTAL |
| WGH501 | SELENIUM | | 2.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGH501 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGH501 | ZINC | 59.90 | | J | 8/30/91 | WATER | TOTAL |
| WGH502 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | ARSENIC | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | BERYLLIUM | | 1.70 | U | 8/30/91 | WATER | TOTAL |

3 8 1135

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGH502 | CADMIUM | 2.10 | | | 8/30/91 | WATER | TOTAL |
| WGH502 | CHROMIUM | 5.50 | | J | 8/30/91 | WATER | TOTAL |
| WGH502 | COPPER | | 9.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | CYANIDE | 16.80 | | | 8/30/91 | WATER | TOTAL |
| WGH502 | LEAD | | 3.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | MERCURY | 1.80 | | | 8/30/91 | WATER | TOTAL |
| WGH502 | NICKEL | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | SELENIUM | | 2.80 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGH502 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGH502 | ZINC | 83.60 | | J | 8/30/91 | WATER | TOTAL |
| WGH901 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | BERYLLIUM | | 2.50 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | CHROMIUM | | 4.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | COPPER | | 6.40 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | CYANIDE | 12.30 | | | 8/29/91 | WATER | TOTAL |
| WGH901 | LEAD | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | MERCURY | 1.10 | | | 8/29/91 | WATER | TOTAL |
| WGH901 | NICKEL | | 10.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | SILVER | | | R | 8/29/91 | WATER | TOTAL |
| WGH901 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | TOTAL |
| WGH901 | ZINC | 79.80 | | J | 8/29/91 | WATER | TOTAL |
| WGH902 | ANTIMONY | | 32.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | ARSENIC | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | BERYLLIUM | | 2.50 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | CADMIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | CHROMIUM | | 4.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | COPPER | | 7.20 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | CYANIDE | | 10.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | LEAD | | 3.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | MERCURY | 1.20 | | | 8/29/91 | WATER | TOTAL |
| WGH902 | NICKEL | 11.10 | | | 8/29/91 | WATER | TOTAL |
| WGH902 | SELENIUM | | 2.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | SILVER | | | R | 8/29/91 | WATER | TOTAL |
| WGH902 | THALLIUM | | 8.00 | U | 8/29/91 | WATER | TOTAL |
| WGH902 | ZINC | | 44.50 | U | 8/29/91 | WATER | TOTAL |
| WGOD25 | ANTIMONY | | 32.00 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | ARSENIC | 12.20 | | | 8/30/91 | WATER | TOTAL |
| WGOD25 | BERYLLIUM | | 3.30 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | CADMIUM | 2.20 | | | 8/30/91 | WATER | TOTAL |

SURFACE WATER RESULTS
SELECTED TAL METALS
(UNITS ARE UG/L)



3 8 1136

| SAMPLE ID | PARAMETER | VALIDATED CONCENTRATION | VALIDATED DETECTION LIMIT | DATA VALIDATION QUALIFIER | DATE SAMPLED | SAMPLE TYPE | METAL |
|---|---|---|---|---|---|---|---|
| WGOD25 | CHROMIUM | 11.10 | | J | 8/30/91 | WATER | TOTAL |
| WGOD25 | COPPER | | 22.60 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | CYANIDE | | 10.00 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | LEAD | 3.70 | | J | 8/30/91 | WATER | TOTAL |
| WGOD25 | MERCURY | 2.80 | | | 8/30/91 | WATER | TOTAL |
| WGOD25 | NICKEL | 45.90 | | | 8/30/91 | WATER | TOTAL |
| WGOD25 | SELENIUM | | 4.90 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | SILVER | | | R | 8/30/91 | WATER | TOTAL |
| WGOD25 | THALLIUM | | 8.00 | U | 8/30/91 | WATER | TOTAL |
| WGOD25 | ZINC | 444.00 | | J | 8/30/91 | WATER | TOTAL |

3 8 1137

**FISH DATA**

**SUMMARY TABLES**

FISH RESULTS



| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-G1-41-FI | 1,2,4-TRICHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 1,2-DICHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 1,3-DICHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 1,4-DICHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 4,4'-DDD | 410.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 4,4'-DDE | 670.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | 4,4'-DDT | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | HEXACHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | LIPIDS | .33 | | | % | 11/07/91 | FILET |
| CC-G1-41-FI | MERCURY | .62 | | | MG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | PENTACHLOROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G1-41-FI | PENTACHLORONITROBENZENE | | U | 920.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 4,4'-DDD | 1200.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 4,4'-DDE | 2200.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | 4,4'-DDT | 170.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | HEXACHLOROBENZENE | 310.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | LIPIDS | 1.33 | | | % | 11/07/91 | FILET |
| CC-G2-38-FI | MERCURY | .57 | | | MG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-38-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 4,4'-DDD | 2600.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 4,4'-DDE | 3800.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | 4,4'-DDT | 240.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | HEXACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | LIPIDS | 1.00 | | | % | 11/07/91 | FILET |
| CC-G2-39-FI | MERCURY | .63 | | | MG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-39-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |

FISH RESULTS



| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-G2-40-FI | 4,4'-DDD | 1500.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 4,4'-DDE | 2300.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | 4,4'-DDT | 200.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | HEXACHLOROBENZENE | 250.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | LIPIDS | 1.00 | | | % | 11/07/91 | FILET |
| CC-G2-40-FI | MERCURY | .57 | | | MG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G2-40-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 4,4'-DDD | 690.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 4,4'-DDE | 1300.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | HEXACHLOROBENZENE | 220.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | LIPIDS | .33 | | | % | 11/07/91 | FILET |
| CC-G3-10-FI | MERCURY | .29 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-10-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 1,2,4-TRICHLOROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 1,2-DICHLOROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 1,3-DICHLOROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 1,4-DICHLOROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 4,4'-DDD | 3000.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 4,4'-DDE | 5900.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | 4,4'-DDT | 360.00 | NJ | | UG/KG | 11/07/91 | [illegible] |
| CC-G3-12-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | HEXACHLOROBENZENE | 580.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | LIPIDS | | < | .33 | % | 11/07/91 | FILET |
| CC-G3-12-FI | MERCURY | .28 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | PENTACHLOROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-12-FI | PENTACHLORONITROBENZENE | | U | 850.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 4,4'-DDD | 1000.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 4,4'-DDE | 2100.00 | | | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | HEXACHLOROBENZENE | 250.00 | NJ | | UG/KG | 11/07/91 | FILET |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-G3-14-FI | LIPIDS | .67 | | | % | 11/07/91 | FILET |
| CC-G3-14-FI | MERCURY | .67 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-14-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 1,2,4-TRICHLOROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 1,2-DICHLOROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 1,3-DICHLOROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 1,4-DICHLOROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 4,4'-DDD | 330.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 4,4'-DDE | 850.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | 4,4'-DDT | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | HEXACHLOROBENZENE | 180.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | LIPIDS | | < | .33 | % | 11/07/91 | FILET |
| CC-G3-16-FI | MERCURY | .39 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | PENTACHLOROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-16-FI | PENTACHLORONITROBENZENE | | U | 940.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 1,2,4-TRICHLOROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 1,2-DICHLOROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 1,3-DICHLOROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 1,4-DICHLOROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 4,4'-DDD | 640.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 4,4'-DDE | 1400.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | 4,4'-DDT | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | HEXACHLOROBENZENE | 200.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | LIPIDS | | < | .33 | % | 11/07/91 | FILET |
| CC-G3-18-FI | MERCURY | .52 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | PENTACHLOROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-18-FI | PENTACHLORONITROBENZENE | | U | 1700.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 1,2,4-TRICHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 1,2-DICHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 1,3-DICHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 1,4-DICHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 4,4'-DDD | 590.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 4,4'-DDE | 1600.00 | NJ | | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | 4,4'-DDT | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | HEXACHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | LIPIDS | | < | .33 | % | 11/07/91 | FILET |
| CC-G3-20-FI | MERCURY | .61 | | | MG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | PENTACHLOROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |
| CC-G3-20-FI | PENTACHLORONITROBENZENE | | U | 2800.00 | UG/KG | 11/07/91 | FILET |

FISH RESULTS



| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E2-05-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 4,4'-DDD | 2600.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 4,4'-DDE | 3900.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | 4,4'-DDT | 430.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | HEXACHLOROBENZENE | 180.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | LIPIDS | .67 | | | % | 11/05/91 | FILET |
| LB-E2-05-FI | MERCURY | 1.50 | | | MG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-05-FI | PENTACHLORON.TROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 4,4'-DDD | 1200.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 4,4'-DDE | 2000.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | 4,4'-DDT | 160.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | HEXACHLOROBENZENE | 120.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | LIPIDS | .67 | | | % | 11/05/91 | FILET |
| LB-E2-06-FI | MERCURY | 1.80 | | | MG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E2-06-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 4,4'-DDD | 810.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 4,4'-DDE | 1700.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | HEXACHLOROBENZENE | 130.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | LIPIDS | .33 | | | % | 11/05/91 | FILET |
| LB-E3-22-FI | MERCURY | 1.40 | | | MG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-22-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 4,4'-DDD | 1300.00 | | | UG/KG | 11/05/91 | FILET |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E3-24-FI | 4,4'-DDE | 2600.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | 4,4'-DDT | 82.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | HEXACHLOROBENZENE | 140.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | LIPIDS | | < | .33 | % | 11/05/91 | FILET |
| LB-E3-24-FI | MERCURY | 2.20 | | | MG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E3-24-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 4,4'-DDD | 1700.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 4,4'-DDE | 3200.00 | | | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | 4,4'-DDT | 200.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | HEXACHLOROBENZENE | 120.00 | NJ | | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | LIPIDS | | < | .33 | % | 11/05/91 | FILET |
| LB-E4-26-FI | MERCURY | 1.70 | | | MG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E4-26-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | FILET |
| LB-E5-29-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 4,4'-DDD | 3100.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 4,4'-DDE | 4900.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | 4,4'-DDT | 470.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | HEXACHLOROBENZENE | 190.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | LIPIDS | .33 | | | % | 11/06/91 | FILET |
| LB-E5-29-FI | MERCURY | 1.70 | | | MG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-29-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 4,4'-DDD | 3800.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 4,4'-DDE | 5800.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | 4,4'-DDT | 360.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | HEXACHLOROBENZENE | 200.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | LIPIDS | 4.33 | | | % | 11/06/91 | FILET |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E5-31-FI | MERCURY | 1.80 | | | MG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E5-31-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 4,4'-DDD | 540.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 4,4'-DDE | 1100.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | HEXACHLOROBENZENE | 150.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | LIPIDS | 1.33 | | | % | 11/06/91 | FILET |
| LB-E6-33-FI | MERCURY | .90 | | | MG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-33-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 4,4'-DDD | 840.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 4,4'-DDE | 2000.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | HEXACHLOROBENZENE | 130.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | LIPIDS | 1.33 | | | % | 11/06/91 | FILET |
| LB-E6-35-FI | MERCURY | 1.50 | | | MG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-35-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 4,4'-DDD | 420.00 | NJ | | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 4,4'-DDE | 980.00 | | | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | 4,4'-DDT | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | CHLOROBENZENE | | U | 5.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | HEXACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | LIPIDS | .67 | | | % | 11/06/91 | FILET |
| LB-E6-36-FI | MERCURY | .99 | | | MG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |
| LB-E6-36-FI | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/06/91 | FILET |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-E4-27-WB | 1,2,4-TRICHLOROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 1,2-DICHLOROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 1,3-DICHLOROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 1,4-DICHLOROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 4,4'-DDD | 11000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 4,4'-DDE | 17000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | 4,4'-DDT | 1000.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | HEXACHLOROBENZENE | 1800.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | LIPIDS | 6.00 | | | % | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | MERCURY | | U | .20 | MG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | PENTACHLOROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-E4-27-WB | PENTACHLORONITROBENZENE | | U | 6600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| CC-G1-42-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 4,4'-DDD | 4500.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 4,4'-DDE | 5000.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | 4,4'-DDT | 270.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | HEXACHLOROBENZENE | 1200.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | LIPIDS | 4.00 | | | % | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | MERCURY | .33 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-42-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 4,4'-DDD | 3300.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 4,4'-DDE | 5700.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | 4,4'-DDT | 160.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | HEXACHLOROBENZENE | 840.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | LIPIDS | 2.33 | | | % | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | MERCURY | .60 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-43-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 4,4'-DDD | 2100.00 | | | UG/KG | 11/07/91 | WHOLE BODY |

FISH RESULTS



| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-G1-44-WB | 4,4'-DDE | 4200.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | 4,4'-DDT | ~~640.00~~ | ~~NJ~~ U | 660 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | HEXACHLOROBENZENE | 640.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | LIPIDS | 2.67 | | | % | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | MERCURY | .32 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G1-44-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 1,2,4-TRICHLOROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 1,2-DICHLOROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 1,3-DICHLOROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 1,4-DICHLOROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 4,4'-DDD | 960.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 4,4'-DDE | 3100.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | 4,4'-DDT | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | HEXACHLOROBENZENE | 220.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | LIPIDS | .34 | | | % | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | MERCURY | .49 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | PENTACHLOROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-09-WB | PENTACHLORONITROBENZENE | | U | 680.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 4,4'-DDD | 910.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 4,4'-DDE | 3000.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | 4,4'-DDT | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | HEXACHLOROBENZENE | 320.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | LIPIDS | 1.67 | | | % | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | MERCURY | .41 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-11-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 1,2,4-TRICHLOROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 1,2-DICHLOROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 1,3-DICHLOROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 1,4-DICHLOROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 4,4'-DDD | 490.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 4,4'-DDE | 2500.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | 4,4'-DDT | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | HEXACHLOROBENZENE | 160.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | LIPIDS | 1.57 | | | % | 11/07/91 | WHOLE BODY |

FISH RESULTS



| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| CC-G3-13-WB | MERCURY | .42 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | PENTACHLOROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-13-WB | PENTACHLORONITROBENZENE | | U | 1000.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 1,2,4-TRICHLOROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 1,2-DICHLOROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 1,3-DICHLOROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 1,4-DICHLOROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 4,4'-DDD | 620.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 4,4'-DDE | 2300.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | 4,4'-DDT | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | HEXACHLOROBENZENE | 410.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | LIPIDS | .47 | | | % | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | MERCURY | .46 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | PENTACHLOROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-15-WB | PENTACHLORONITROBENZENE | | U | 930.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 4,4'-DDD | 1900.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 4,4'-DDE | 4100.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | 4,4'-DDT | 93.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | HEXACHLOROBENZENE | 410.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | LIPIDS | | < | .33 | % | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | MERCURY | .44 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-17-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 4,4'-DDD | 2200.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 4,4'-DDE | 2600.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | 4,4'-DDT | 67.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | HEXACHLOROBENZENE | 730.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | LIPIDS | 1.33 | | | % | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | MERCURY | .45 | | | MG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| CC-G3-19-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E1-02-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 4,4'-DDD | 5800.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 4,4'-DDE | 8800.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | 4,4'-DDT | 870.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | HEXACHLOROBENZENE | 1000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | LIPIDS | 1.33 | | | % | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | MERCURY | .70 | | | MG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | PENTACHLOROBENZENE | 70.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-02-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 1,2,4-TRICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 1,2-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 1,3-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 1,4-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 4,4'-DDD | 8000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 4,4'-DDE | 12000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | 4,4'-DDT | 660.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | CHLOROBENZENE | 4.86 | NJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | HEXACHLOROBENZENE | 960.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | LIPIDS | .67 | | | % | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | MERCURY | .84 | | | MG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | PENTACHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E1-03-WB | PENTACHLORONITROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 1,2,4-TRICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 1,2-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 1,3-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 1,4-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 4,4'-DDD | 8500.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 4,4'-DDE | 13000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | 4,4'-DDT | 1200.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | HEXACHLOROBENZENE | 800.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | LIPIDS | 1.33 | | | % | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | MERCURY | .91 | | | MG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | PENTACHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-21-WB | PENTACHLORONITROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 1,2,4-TRICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 1,2-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 1,3-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 1,4-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 4,4'-DDD | 22000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E3-23-WB | 4,4'-DDE | 24000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | 4,4'-DDT | 890.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | HEXACHLOROBENZENE | 1200.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | LIPIDS | 3.33 | | | % | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | MERCURY | .77 | | | MG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | PENTACHLOROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-23-WB | PENTACHLORONITROBENZENE | | U | 2600.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 1,2,4-TRICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 1,2-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 1,3-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 1,4-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 4,4'-DDD | 8900.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 4,4'-DDE | 12000.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | 4,4'-DDT | 340.00 | NJ | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | HEXACHLOROBENZENE | 1400.00 | | | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | LIPIDS | 4.67 | | | % | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | MERCURY | .47 | | | MG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | PENTACHLOROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E3-25-WB | PENTACHLORONITROBENZENE | | U | 1300.00 | UG/KG | 11/05/91 | WHOLE BODY |
| LB-E5-28-WB | 1,2,4-TRICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 1,2-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 1,3-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 1,4-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 4,4'-DDD | 8000.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 4,4'-DDE | 12000.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | 4,4'-DDT | 440.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | HEXACHLOROBENZENE | 1000.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | LIPIDS | .33 | | | % | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | MERCURY | .79 | | | MG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | PENTACHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-28-WB | PENTACHLORONITROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 1,2,4-TRICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 1,2-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 1,3-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 1,4-DICHLOROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 4,4'-DDD | 11000.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 4,4'-DDE | 16000.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | 4,4'-DDT | 500.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | HEXACHLOROBENZENE | 2500.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | LIPIDS | 6.67 | | | % | 11/06/91 | WHOLE BODY |

| FIELD SAMPLE ID | PARAMETER | CONCENTRATION | FLAG | DETECTION LIMIT | UNITS | Date Collected | SAMPLE TYPE |
|---|---|---|---|---|---|---|---|
| LB-E5-30-WB | MERCURY | .76 | | | MG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | PENTACHLOROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-30-WB | PENTACHLORONITROBENZENE | | U | 2600.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 1,2,4-TRICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 1,2-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 1,3-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 1,4-DICHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 4,4'-DDD | 5200.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 4,4'-DDE | 8800.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | 4,4'-DDT | 200.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | HEXACHLOROBENZENE | 1600.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | LIPIDS | 2.67 | | | % | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | MERCURY | .70 | | | MG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | PENTACHLOROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E5-32-WB | PENTACHLORONITROBENZENE | | U | 1300.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | 4,4'-DDD | 3000.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | 4,4'-DDE | 5900.00 | | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | 4,4'-DDT | 360.00 | NJ | | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | HEXACHLOROBENZENE | 580.00 | NJ | | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | LIPIDS | 2.00 | | | % | | WHOLE BODY |
| LB-E6-34-WB | MERCURY | .76 | | | MG/KG | 11/06/91 | WHOLE BODY |
| LB-E6-34-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-E6-34-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | | WHOLE BODY |
| LB-G1-37-WB | 1,2,4-TRICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 1,2-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 1,3-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 1,4-DICHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 4,4'-DDD | 2800.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 4,4'-DDE | 4200.00 | | | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | 4,4'-DDT | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | CHLOROBENZENE | | UJ | 5.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | HEXACHLOROBENZENE | 230.00 | NJ | | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | LIPIDS | 1.67 | | | % | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | MERCURY | 1.20 | | | MG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | PENTACHLOROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |
| LB-G1-37-WB | PENTACHLORONITROBENZENE | | U | 660.00 | UG/KG | 11/07/91 | WHOLE BODY |

# APPENDIX B

Woodward-Clyde Consultants

# APPENDIX B

## FLORA AND FAUNA KNOWN OR EXPECTED TO EXIST IN OPERABLE UNIT 2

Woodward-Clyde Consultants

## AMPHIBIANS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN

Family AMBYSTOMATIDAE - mole salamanders

Ambystoma maculatum (spotted salamander)
Ambystoma opacum (marbled salamander)*
Ambystoma talpoideum (mole salamander)
Ambystoma tigrinum (tiger salamander)

Family AMPHIUMIDAE - amphiumas

Amphiuma means (two-toed amphiuma)

Family PLETHODONTIDAE - woodland salamanders

Desmognathus fuscus (dusky salamander)*
Eurycea cirrigera (southern two-lined salamander)
Eurycea longicauda (long-tailed salamander)*
Eurycea quadridigitata (dwarf salamander)
Plethodon glutinosus (slimy salamander)*
Pseudotriton montanus (mud salamander)
Pseudotriton ruber (red salamander)

Family PROTEIDAE - mudpuppies and waterdogs

Necturus beyeri (Gulf coast waterdog)

Family SALAMANDRIDAE - newts

Notophthalmus viridescens (eastern newt)

Family SIRENIDAE - sirens

**AMPHIBIANS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**

Siren intermedia (lesser siren)

Family BUFONIDAE - toads

Bufo quercicus (oak toad)
Bufo terrestris (southern toad)*†
Bufo woodhousei (Woodhouse's toad)

Family HYLIDAE - treefrogs and cricket frogs

Acris crepitans (northern cricket frog)
Acris gryllus (southern cricket frog)*
Hyla avivoca (bird-voiced frog)
Hyla cinerea (green treefrog)
Hyla crucifer (spring peeper)*
Hyla femoralis (pine woods treefrog)
Hyla gratiosa (barking treefrog)
Hyla squirella (squirrel treefrog)
Hyla versicolor (gray treefrog)
Pseudacris nigrita (southern chorus frog)*
Pseudacris ornata (ornate chorus frog)

Family MICROHYLIDAE - narrow-mouthed toads

Gastrophryne carolinensis (eastern narrow-mouthed toad)*

Family PELOBATIDAE - spade-footed toads

Scaphiopus holbrookii (eastern spadefoot toad)*

**AMPHIBIANS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**

Family RANIDAE - true frogs

Rana areolata (gopher frog)
Rana catesbeiana (bullfrog)*†
Rana clamitans (bronze frog)*†
Rana grylio (pig frog)
Rana sphenocephala (southern leopard frog)*†

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* Species predicted by Dr. David H. Nelson of the University of South Alabama to be likely to be common.

† Species observed during July and/or November sampling activities.

Woodward-Clyde Consultants

# FISHES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN LAKE

Family POLYODONTIDAE - paddlefishes

Polydon spathula (paddlefish)

Family LEPISOSTEIDAE - gars

Lepisosteus oculatus (spotted gar)*
Lepisosteus osseus (longnose gar)*

Family AMIIDAE - bowfins

Amia calva (bowfin)

Family ANGUILLIDAE - freshwater eels

Anguilla rostrata (American eel)*

Family CLUPEIDAE - herrings

Alosa chrysochloris (skipjack herring)*
Dorosoma cepedianum (gizzard shad)*
Dorosoma petenense (threadfin shad)*

Family ENGRAULIDAE - anchovies

Anchoa mitchilli (bay anchovy)

**FISHES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN LAKE (Continued)** 3 8 1156

Family CYPRINIDAE - carps and minnows

Cyprinella venusta (blacktail shiner)
Cyprinus carpio (common carp)*
Hybognathus nuchalis (Mississippi silvery minnow)*
Macrhybopsis storeriana (silver chub)
Notemigonus crysoleucas (golden shiner)*
Notropis atherinoides (emerald shiner)
Notropis candidus (silverside shiner)
Notropis texanus (weed shiner)
Opsopoeodus emiliae (pugnose minnow)
Pimephales vigilax (bullhead minnow)

Family CATOSTOMIDAE - suckers

Carpiodes cyprinus (quillback)*
Carpiodes velifer (highfin carpsucker)
Erimyzon sucetta (lake chubsucker)
Ictiobus bubalus (smallmouth buffalo)*
Minytrema melanops (spotted sucker)
Moxostoma poecilurum (blacktail redhorse)*

Family ICTALURIDAE - bullhead catfishes

Ameiurus melas (black bullhead)
Ameiurus natalis (yellow bullhead)
Ictalurus furcatus (blue catfish)*
Ictalurus punctatus (channel catfish)*
Noturus gyrinus (tadpole madtom)
Pylodictis olivaris (flathead catfish)

**FISHES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN LAKE (Continued)** 3 8 1157

Family ESOCIDAE - pikes

Esox americanus (grass pickerel)
Esox niger (chain pickerel)*

Family APHREDODERIDAE - pirate perches

Aphedoderus sayanus (pirate perch)

Family BELONIDAE - needlefishes

Strongylura marina (Atlantic needlefish)

Family CYPRINODONTIDAE - killifishes

Fundulus olivaceus (blackspotted topminnow)**

Family POECILIIDAE - livebearers

Gambusia affinis (mosquitofish)**

Family ATHERINIDAE - silversides

Labidesthes sicculus (brook silverside)**

Family PERCICHTHYIDAE - temperate basses

Morone chrysops (white bass)*
Morone mississippiensis (yellow bass)*
Morone saxatilis (striped bass)

## FISHES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN LAKE (Continued)



### Family CENTRARCHIDAE - sunfishes

Centrarchus macropterus (flier)
Elassoma zonatum (banded pygmy sunfish)
Lepomis cyanellus (green sunfish)
Lepomis gulosus (warmouth)*
Lepomis macrochirus (bluegill)*
Lepomis marginatus (dollar sunfish)
Lepomis megalotis (longear_sunfish)
Lepomis microlophus (redear sunfish)*
Lepomis punctatus (spotted sunfish)
Micropterus salmoides (largemouth bass)*
Pomoxis annularis (white crappie)
Pomoxis nigromaculatus (black crappie)*

### Family PERCIDAE - perches

Etheostoma chlorosomum (bluntnose darter)
Etheostoma fusiforme (swamp darter)
Etheostoma proeliare (cypress darter)

### Family SCIAENIDAE - drums

Aplodinotus grunniens (freshwater drum)*

### Family MUGILIDAE - mullets

Mugil cephalus (striped mullet)*

**FISHES KNOWN OR EXPECTED TO OCCUR IN THE
OLIN MCINTOSH BASIN LAKE (Continued)** 3 8 1159

Family SOLEIDAE - soles

Trinectes maculatus (hogchoker)*

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* Species collected or seen during July and/or November sampling activities.

** Species observed along margins on various occasions.

## REPTILES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN

3 8 1160

### Family CHELYDRIDAE - snapping turtles

Chelydra serpentina (snapping turtle)*
Macroclemys temminckii (alligator snapping turtle)

### Family EMYDIDAE - land and freshwater turtles

Chrysemys picta (painted turtle)
Deirochelys reticularia (chicken turtle)
Graptemys nigrinoda (black-knobbed sawback)
Graptemys pulchra (Alabama map turtle)*
Pseudemys concinna (river cooter)
Pseudemys floridana (cooter)
Terrapene carolina (eastern box turtle)*
Trachemys scripta (slider)*†

### Family KINOSTERNIDAE - mud and musk turtles

Kinosternon subrubrum (eastern mud turtle)*
Sternotherus minor (loggerhead musk turtle)
Sternotherus odoratus (stinkpot)*†

### Family TESTUDINIDAE - tortoises

Gopherus polyphemus (gopher tortoise)

### Family TRIONYCHIDAE - soft-shelled turtles

Apalone mutica (smooth softshell)
Apalone spinifera (spiny softshell)

## REPTILES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)



Family ANGUIDAE - glass lizards

Ophisaurus attenuatus (slender glass lizard)
Ophisaurus ventralis (eastern glass lizard)*

Family IGUANIDAE - iguanids

Anolis carolinensis (green anole, "chamaeleon")*†
Sceloporus undulatus (eastern fence lizard)*†

Family SCINCIDAE - skinks

Eumeces anthracinus (coal skink)
Eumeces fasciatus (five-lined skink)
Eumeces inexpectatus (southeastern five-lined skink)
Eumeces laticeps (broad-headed skink)
Scincella lateralis (ground skink)*†

Family TEIDAE - racerunners

Cnemidophorus sexlineatus (six-lined racerunner)*

Family COLUBRIDAE - colubrid snakes

Cemophora coccinea (scarlet snake)
Coluber constrictor (racer)
Diadophus punctatus (ring-necked snake)*
Elaphe guttata (corn snake)
Elaphe obsoleta (rat snake)*
Farancia abacura (mud snake)
Farancia erythrogramma (rainbow snake)

**REPTILES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Heterodon platorhinos (eastern hog-nosed snake)*
Heterodon simus (southern hog-nosed snake)
Lampropeltis getulus (common kingsnake)*
Lampropeltis triangulum (milk snake)
Masticophus flagellum (coachwhip)*
Nerodia erythrogaster (plain-bellied water snake)
Nerodia fasciata (banded water snake)*†
Nerodia rhombifera (diamond-backed water snake)
Nerodia sipedon (northern water snake)
Opheodrys aestivus (rough green snake)
Pituophis melanoleucas (pine snake)
Regina rigida (glossy crayfish snake)
Rhabida flavilata (pine woods snake)
Storeria dekayi (brown snake)
Storeria occipitomaculata (red-bellied snake)*
Tantilla coronata (southeastern crowned snake)*
Thamnophis sauritus (eastern ribbon snake)
Thamnophis sirtalis (garter snake)*
Virginia striatula (rough earth snake)
Virginia valeriae (smooth earth snake)

Family ELAPIDAE - coral snakes

Micrurus fulvius (eastern coral snake)

**REPTILES KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**

Family VIPERIDAE - vipers

Agkistrodon contortrix (copperhead)*
Agkistrodon piscivorus (cottonmouth)*
Crotalus adamanteus (eastern diamond-backed rattlesnake)
Crotalus horridus (timber rattlesnake)
Sistrurus miliarius (pygmy rattlesnake)

Family CROCODYLIDAE - crocodilians

Alligator mississippiensis (American alligator)*†

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* Species predicted by Dr. David H. Nelson of the University of South Alabama to be likely to be common.

† Species observed during July and/or November sampling activities.

## MAMMALS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN

Family DIDELPHIDAE - opossums

_Didelphis virginiana_ (Virginia opossum)*†

Family SORICIDAE - shrews

_Blarina brevicauda_ (short-tailed shrew)*
_Cryptotis parva_ (least shrew)*

Family TALPIDAE - moles

_Scalopus aquaticus_ (eastern mole)*

Family VESPERTILIONIDAE - vespertilionid bats

_Myotis austroriparius_ (southeastern myotis)
_Lasionycteris noctivagans_ (silver-haired bat)
_Pipistrellus subflavus_ (eastern pipistrelle)
_Eptesicus fuscus_ (big brown bat)*
_Lasiurus borealis_ (red bat)
_Lasiurus seminolus_ (Seminole bat)*
_Lasiurus cinereus_ (hoary bat)
_Nycticeius humeralis_ (evening bat)*
_Plecotus rafinesquii_ (Rafinesque's big-eared bat)

Family MOLOSSIDAE - free-tailed bats

_Tadarida brasiliensis_ (Brasilian free-tailed bat)

**MAMMALS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**

3 8 1165

Family DASYPODIDAE - armadillos

Dasypus novemcinctus (nine-banded armadillo)*†

Family LEPORIDAE - hares and rabbits

Sylvilagus aquaticus (swamp rabbit)*†
Sylvilagus floridanus (eastern cottontail)

Family SCIURIDAE - squirrels

Sciurus carolinensis (gray squirrel)*†
Sciurus niger (fox squirrel)
Glaucomys volans (southern flying squirrel)

Family GEOMYIDAE - pocket gophers

Geomys pinetus (southeastern pocket gopher)

Family CASTORIDAE - beavers

Castor canadensis (American beaver)*†

Family CRICETIDAE - New World rats and mice

Oryzomys palustris (marsh rice rat)*
Reithrodontomys humulis (eastern harvest mouse)
Peromyscus polionotus (oldfield mouse)
Peromyscus gossypinus (cotton mouse)*
Ochrotomys nuttalli (golden mouse)
Sigmodon hispidus (cotton rat)*†

**Woodward-Clyde Consultants**

## MAMMALS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)

3 8 1166

Neotoma floridana (eastern wood rat)
Microtus pinetorum (woodland vole)
Ondatra zibethicus (muskrat)*

Family CAPROMYDIAE - coypus

Myocaster coypus (nutria)*

Family MURIDAE - Old World rats and mice

Rattus norvegicus (Norway rat)
Mus musculus (house mouse)

Family CANIDAE - doglike carnivores

Vulpes fulva (red fox)
Urocyon cinereoargenteus (gray fox)*†

Family URSIDAE - bears

Ursus americanus (black bear)

Family PROCYONIDAE - raccoons

Procyon lotor (raccoon)*†

**MAMMALS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)** 3 8 1167

Family MUSTELIDAE - mustelids

Mustela frenata (long-tailed weasel)
Mustela vison (mink)*
Spilogale putorius (spotted skunk)
Mephitis mephitis (striped skunk)*
Lutra canadensis (river otter)*

Family FELIDAE - cats

Felis concolor (cougar)
Lynx rufus (bobcat)*

Family CERVIDAE - deer

Odocoileus virginianus (white-tailed deer)*†

Family SUIDAE - hogs

Sus scrofa (wild hog)

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* Species predicted by Dr. David H. Nelson of the University of South Alabama to be likely to be common.

† Species observed during July and/or November sampling activities (directly or indirectly, by means of sign).

Woodward-Clyde Consultants

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN**

3 8 1168

Family GAVIIDAE - loons

Gavia immer (common loon)

Family PODICIPEDIDAE - grebes

Podiceps auritus (horned grebe)
Podilymbus podiceps (pied-billed grebe)*

Family PHALACROCORACIDAE - cormorants

Phalacrocorax auritus (double-crested cormorant)†

Family ANHINGIDAE - anhingas

Anhinga anhinga (American anhinga)

Family ARDEIDAE - herons

Ardea herodias (great blue heron)*†
Bururides virescens (green heron)*
Florida caerulea (little blue heron)*
Bubulcus ibis (cattle egret)*†
Casmerodius albus (American egret)*†
Egretta thula (snowy egret)
Hydranassa tricolor (Louisiana heron)
Nycticorax nycticorax (black-crowned night heron)
Nyctanass violacea (yellow-crowned night heron)*
Ixobrychus exilis (least bittern)
Botaurus lentiginosus (American bittern)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family CICONIIDAE - storks

Mycteria americana (wood stork)

Family THRESKIORNITHIDAE - ibises

Plegadis falcinellus (glossy ibis)
Eudocimus albus (white ibis)*

Family ANATIDAE - swans, geese, and ducks

Olor columbianus (whistling swan)
Branta canadensis (Canadian goose)
Anser albifrons (white-fronted goose)
Chen caerulescens (snow goose)
Dendrocygna bicolor (fulvous tree-duck)
Anas platyrhynchos (mallard)*
Anas rubripes (black duck)*
Anas strepera (gadwall)
Anas acuta (pintail)
Anas crecca (green-winged teal)*†
Anas discors (blue-winged teal)
Anas americana (American wigeon)
Anas clypeata (northern shoveler)
Aix sponsa (wood duck)*†
Aythya americana (redhead)
Aythya collaris (ring-necked duck)*
Aythya valisineria (canvasback)
Aythya affinis (lesser scaup)*
Bucephala clangula (common goldeneye)
Bucephala albeola (bufflehead)
Melanitta deglandi (white-winged scoter)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)** 3 8 1170

Oxyura jamaicensis (ruddy duck)
Lophodytes cucullatus (hooded merganser)
Mergus merganser (common merganser)
Mergus serrator (red-breasted merganser)

Family CATHARTIDAE - vultures

Cathartes aura (turkey vulture)*†
Coragyps atratus (black vulture)*

Family ACCIPITRIDAE - hawks

Elanoides forficatus (swallow-tailed kite)
Ictinia misisippiensis (Mississippi kite)*
Accipiter striatus (sharp-shinned hawk)
Buteo jamaicensis (red-tailed hawk)*
Buteo platypterus (broad-winged hawk)*
Buteo swainsoni (Swainson's hawk)
Buteo lagopus (rough-legged hawk)
Aquila chrysaetos (golden eagle)
Haliaeetus leucocephalus (bald eagle)
Circus cyaneus (marsh hawk)

Family PANDIONIDAE - ospreys

Pandion haliaetus (osprey)

Family FALCONIDAE - falcons

Falco peregrinus (peregrine falcon)
Falco columbarius (merlin)
Falco sparverius (American kestrel)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family PHASIANIDAE - quail

Colinus virginianus (bobwhite)*

Family MELEAGRIDIDAE - turkeys

Meleagris gallopavo (wild turkey)*†

Family RALLIDAE - rails

Rallus elegans (king rail)*
Rallus limnicola (Virginia rail)
Porzana carolina (sora)
Porphyrula martinica (purple gallinule)
Gallinula chloropus (common gallinule)
Fulica americana (American coot)*†

Family CHARADRIIDAE - plovers

Charadrius semipalmatus (semipalmated plover)
Charadrius melodus (piping plover)
Charadrius vociferus (killdeer)*
Pluvialis dominica (American golden plover)
Pluvialis squatarola (black-bellied plover)

Family SCOLOPACIDAE - sandpipers

Capella gallinago (common snipe)
Numenius phaeopus (whimbrel)
Bartramia longicauda (upland sandpiper)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**

3 8 1172

Actitis macularia (spotted sandpiper)
Tringa solitaria (solitary sandpiper)
Tringa melanoleuca (greater yellowlegs)
Tringa flavipes (lesser yellowlegs)*
Catoptrophorus semipalmatus (willet)
Calidris melanotos (pectoral sandpiper)
Calidris fuscicollis (white-rumped sandpiper)
Calidris minutilla (least sandpiper)*
Calidris alpina (dunlin)
Calidris pusilla (semipalmated sandpiper)
Calidris mauri (western sandpiper)
Calidris himantopus (stilt sandpiper)
Limnodromus griseus (short-billed dowitcher)

Family LARIDAE - gulls

Larus argentatus (herring gull)†
Larus delawarensis (ring-billed gull)*
Larus atricilla (laughing gull)
Larus philadelphia (Bonaparte's gull)
Sterna forsteri (Forster's tern)
Sterna hirundo (common tern)
Sterna fuscata (sooty tern)
Sterna albifrons (least tern)
Hydroprogne caspia (Caspian tern)
Chlidonias niger (black tern)

Family COLUMBIDAE - pigeons and doves

Columba livia (rock pigeon, "common pigeon")*†
Zenaida asiatica (white-winged dove)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Zenaida macroura (mourning dove)*†
Columbina passerina (common ground dove)

Family CUCULIDAE - cuckoos

Coccyzus americanus (yellow-billed cuckoo)*
Coccyzus erythrothalmus (black-billed cuckoo)

Family TYTONIDAE - barn owls

Tyto alba (barn owl)

Family STRIGIDAE - typical owls

Otus asio (common screech owl)*
Bubo virginianus (great horned owl)*
Strix varia (barred owl)*†
Asio flammeus (short-eared owl)
Aegolius acadicus (saw-whet owl)

Family CAPRIMULGIDAE - goatsuckers

Caprimulgus carolinensis (chuck-will's-widow)*
Caprimulgus vociferus (whip-poor-will)
Chordeiles minor (common nighthawk)*

Family APODIDAE - swifts

Chaetura pelagica (chimney swift)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family TROCHILIDAE - hummingbirds

Archilochus colubris (ruby-throated hummingbird)*

Family ALCEDINIDAE - kingfishers

Megaceryle alcyon (be'ted kingfisher)*†

Family PICIDAE - woodpeckers

Colaptes auratus (common flicker)*†
Dryocopus pileatus (pileated woodpecker)*
Centurus carolinus (bed-bellied woodpecker)*†
Melanerpes erythrocephalus (red-headed woodpecker)*
Sphyrapicus varius (yellow-bellied sapsucker)*†
Dendrocopos villosus (hairy woodpecker)
Dendrocopos pubescens (downy woodpecker)

Family TYRANNIDAE - flycatchers

Tyrannus tyrannus (eastern kingbird)*
Tyrannus verticalis (western kingbird)
Muscivora forficata (scissor-taileld flycatcher)
Myiarchus crinitus (great crested flycatcher)*
Sayornis phoebe (eastern phoebe)*
Empidonax virescens (Acadian flycatcher)
Contopus virens (eastern wood pewee)*

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family HIRUNDINIDAE - swallows

Iridoprocne bicolor (tree swallow)*
Riparia riparia (bank swallow)
Stelgidopteryx ruficollis (rough-winged swallow)
Hirundo rustica (barn swallow)*†
Petrochelidon pyrrhonota (cliff swallow)
Progne subis (purple martin)*

Family CORVIDAE - crows

Cyanocitta cristata (blue jay)*†
Corvus brachyrhynchos (common crow)*†
Corvus ossifragus (fish crow)

Family PARIDAE - tits

Parus carolinensis (Carolina chickadee)*†
Parus bicolor (tufted titmouse)*†

Family SITTIDAE - nuthatches

Sitta canadensis (red-breasted nuthatch)

Family CERTHIIDAE - creepers

Certhia familiaris (brown creeper)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family TROGLODYTIDAE - wrens

Troglodytes aedon (northern house wren)*
Troglodytes troglodytes (winter wren)
Thrynomanes bewickii (Bewick's wren)
Thryothorus ludovicianus (Carolina wren)*†
Telmatodytes palustris (long-billed marsh wren)*
Cistothorus platensis (sedge wren)*

Family MIMIDAE - mimic thrushes

Dumetella carolinensis (gray catbird)*
Mimus polyglottos (northern mockingbird)*†
Toxostoma rufum (brown thrasher)*

Family TURDIDAE - true thrushes

Turdus migratorius (American robin)*†
Hylocichla mustelina (wood thrush)*
Catharus guttatus (hermit thrush)*
Catharus ustulatus (Swainson's thrush)
Catharus minimus (gray-cheeked thrush)
Catharus fuscescens (veery)
Sialia sialis (eastern bluebird)

Family SYLVIIDAE - Old World warblers

Polioptila caerulea (blue-gray gnatcatcher)
Regulus satrapa (golden-crowned kinglet)*
Regulus calendula (ruby-crowned kinglet)*

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family MOTACILLIDAE - wagtails

Anthus spinoletta (water pipit)

Family BOMBYCILLIDAE - waxwings

Bombycilla cedrorum (cedar waxwing)*

Family LANIIDAE - shrikes

Lanius ludovicianus (loggerhead shrike)*

Family STURNIDAE - starlings

Sturnus vulgaris (starling)*†

Family VIREONIDAE - vireos

Vireo griseus (white-eyed vireo)*
Vireo flavifrons (yellow-throated vireo)
Vireo solitarius (solitary vireo)
Vireo olivaceus (red-eyed vireo)
Vireo philadelphicus (Philadelphia vireo)
Vireo gilvus (warbling vireo)

Family PARULIDAE - wood-warblers

Mniotilta varia (black-and-white warbler)*
Protonotoria citrea (prothonotory warbler)*†
Limnothlypis swainsonii (Swainson's warbler)
Helmitheros vermivorus (worm-eating warbler)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)** 3 8 1178

Vermivora chrysoptera (golden-winged warbler)
Vermivora pinus (blue-winged warbler)
Vermivora perigrina (Tennessee warbler)*
Vermivora celata (orange-crowned warbler)
Vermivora ruficapilla (Nashville warbler)
Parula americana (northern parula warbler)
Dendroica petechia (yellow warbler)*
Dendroica magnolia (magnolia warbler)
Dendroica coronata (myrtle warbler, "yellow-rumped warbler")*†
Dendroica discolor (prairie warbler)
Dendroica fusca (Blackburnian warbler)
Dendroica dominica (yellow-throated warbler)
Dendroica pensylvanica (chestnut-sided warbler)
Dendroica castanea (bay-breasted warbler)
Dendroica striata (blackpoll warbler)
Dendroica pinus (pine warbler)*
Dendroica palmarum (palm warbler)*
Seiurus aurocapillus (ovenbird)*
Seiurus noveboracensis (northern waterthrush)
Seiurus motacilla (Louisiana waterthrush)
Geothlypis formosa (Kentucky warbler)
Wilsonia citrina (hooded warbler)*
Icteria virens (yellow-breasted chat)*
Setophaga ruticella (American redstart)

Family PLOCEIDAE - weaver finches

Passer domestica (house sparrow)*†

**Woodward-Clyde Consultants**

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE OLIN MCINTOSH BASIN (Continued)**



Family ICTERIDAE - blackbirds, orioles, meadowlarks

<u>Dolichonyx</u> <u>oryzivorus</u> (bobolink)
<u>Sturnella</u> <u>magma</u> (eastern meadowlark)*
<u>Agelaius</u> <u>phoeniceus</u> (rid-winged blackbird)*
<u>Icterus</u> <u>spurius</u> (orchard oriole)*
<u>Icterus</u> <u>galbula</u> (Baltimore oriole)
<u>Quiscalus</u> <u>quiscula</u> (common grackle)*†
<u>Euphagus</u> <u>carolinus</u> (rusty blackbird)*
<u>Euphagus</u> <u>cyanocephalus</u> (Brewer's blackbird)
<u>Molothrus</u> <u>ater</u> (brown-headed cowbird)*†

Family THRAUPIDAE - tanagers

<u>Piranga</u> <u>olivacea</u> (scarlett tanager)
<u>Piranga</u> <u>rubra</u> (summer tanager)

Family FRINGILLIDAE - finches

<u>Cardinalis</u> <u>cardinalis</u> (cardinal)*†
<u>Pheucticus</u> <u>ludovicianus</u> (rose-breasted grosbeak)
<u>Guiraca</u> <u>caerulea</u> (blue grosbeak)
<u>Passerina</u> <u>cyanea</u> (indigo bunting)*
<u>Passerina</u> <u>ciris</u> (painted bunting)
<u>Hesperiphona</u> <u>vespertina</u> (evening grosbeak)
<u>Carpodacus</u> <u>purpureus</u> (purple finch)
<u>Spinus</u> <u>pinus</u> (pine siskin)
<u>Spinus</u> <u>tristis</u> (American goldfinch)*
<u>Pipilo</u> <u>erythrophthalmus</u> (rufous-sided towhee)*
<u>Passerculus</u> <u>sandwichensis</u> (savannah sparrow)*
<u>Ammodramus</u> <u>savannarum</u> (grasshopper sparrow)

**BIRDS KNOWN OR EXPECTED TO OCCUR IN THE**
**OLIN MCINTOSH BASIN (Continued)**



Ammospiza leconteii (Le Conte's sparrow)
Pooecetes gramineus (vesper sparrow)
Aimophila aestivalis (Bachman's sparrow)
Junco hyemalis (slate-colored junco, "dark-eyed junco")
Spizella passerina (chipping sparrow)*
Spizella pusilla (field sparrow)
Zonotrichia leucophrys (white-crowned sparrow)
Zonotrichia albicollis (white-throated sparrow)*
Passerella iliaca (fox sparrow)
Melospiza georgiana (swamp sparrow)*†
Melospiza melodia (song sparrow)

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* Species predicted by Dr. David H. Nelson on the University of South Alabama to be likely to be common.

† Species observed during July and/or November sampling activities.

## BENTHIC TAXA IDENTIFIED IN SAMPLES FROM THE MCINTOSH SITE

| | |
|---|---|
| Planariidae | |
| Nematoda | |
| Hirudinea | |
| Oligochaeta: | Aulodrilus pigueti |
| | Branchiura sowerbyi |
| | Ilyodrilus templetoni |
| | Limnodrilus claparedianus |
| | Limnodrilus maumeensis |
| | Dero digitata |
| | Dero nivea |
| | Nais communis/variabilis |
| | Nais pardalis |
| | Pristinella aequiseta |
| | Pristinella jenkinae |
| | Stephensoniana trivandrana |
| | Sparganophilidae |
| Hydracarina | |
| Decapoda (immature) | |
| Isopoda: | Caecidotea |
| Megaloptera: | Sialis |
| Hemiptera: | Trichocorixa |
| Coleoptera: | Berosus |
| | Tropisternus |
| | Hydacticus |
| | Stenelmis |

**BENTHIC TAXA IDENTIFIED IN SAMPLES FROM THE MCINTOSH SITE (Continued)**

| | |
|---|---|
| Odonata: | Gomphus |
| | Libellula |
| | Perithemis |
| Ephemeroptera: | Caenis |
| | Siphlonurus |
| Trichoptera: | Oecetis |
| | Orthrotrichia |
| Diptera: | Tabanidae: Chrysops |
| | Chaoboridae: Chaoborus |
| | Chironomidae |
| Gastropoda: | Ferrissia |
| | Physella |
| | Cincinnatia cincinnatiensis |
| | Planorbidae (probably Menetus dilatatus |
| Bivalvia: | Toxolasma lividus |
| | Quadrula probably quadrula |
| | Musculium |
| | Sphaerium |
| | Corbicula |